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THE ZOOLOGIST:

A POPULAR MONTHLY MAGAZINE OF NATURAL HISTORY, AND JOURNAL FOR RECORDING FACTS AND ANECDOTES

RELATING TO

QUADRUPEDS, BIRDS, REPTILES, FISHES, MOLLUSKS,
INSECTS, WORMS, ZOOPHYTES, &c.

THEIR HABITS, FOOD, RETREATS, OCCASIONAL APPEARANCE,
MIGRATIONS, NESTS AND YOUNG.

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TO CORRESPONDENTS.

Tantæne animis celestibus iræ?—Is it possible that Entomologists, whose minds ought to be so gentle, so yielding, so forgiving, should be irate because I have not sent them 'Annuals' with coloured plates? In my advertisement I said nothing about a coloured plate, nor am I aware that Mr. Stainton has said anything on the subject: I think Mr. Stainton would perhaps have acted kindly as well as judiciously, had he given purchasers the choice of a plain copy for a *shilling* or a coloured copy for *half-a-crown.* I think he did so on a former occasion. But it certainly is a question for Mr. Stainton to consider, and not for the booksellers; he alone can give the explanation, and all complaints should be addressed personally to him, just in the same way as all complaints as to Zoologist's shortcomings ought to be sent to me.

Volumes for 1863.—The fifteen numbers of the 'Zoologist' published during 1863 have been bound, and Mr. Van Voorst has a supply on hand at the usual price of Thirteen Shillings. I am happy to say that a few copies of each number still remain unsold, so that Subscribers not having completed their sets may still do so: this will be impossible a few weeks hence.

Volumes for 1861 and 1862.—A Learned Society has purchased the copies lately offered, but through the kindness of a correspondent, who has sent up four well read but uninjured numbers, I have been able to bind complete copies for both years, which are again offered as before at Eighteen Shillings each.

Distribution of Subjects.—Last month the papers on Birds crowded out those on Reptiles, Mollusks and Insects, which are now published. This has caused a little irregularity, which I hope will not occasion any inconvenience or disappointment to the Ornithologists whose contributions are acknowledged below.

Cuckoos in January.—The records of Cuckoos singing in January have been unusually abundant this year: they are respectfully but positively declined until the bird itself shall accompany the notices: *then* they will be most welcome.

PAPERS REMAINING ON HAND.

Sucklers.—George Norman.

Birds.—H. Hadfield, Alfred Wheeler, Anthony S. Bradby, John A. Harvie Brown, James Cooper, Murray A. Matthews, Charles B. Wharton, Philip Crowley, Henry Reeks, William Beek, Edward Jenner, C. J. Maurice, Charles Stubbs, W. Jeffrey, jun., C. J. Cox, H. W. Newman, T. Beavan Rake, S. P. Saville, Richard Tyrer, jun., Henry T. Wharton, Henry Stevenson, C. Harvey Smith, H. Harpur Crewe, Samuel Hudson, E. H. Rodd, George Norman, Thomas Goatley, H. Pratt, A. Matthews, H. Blake-Knox and John Ranson.

Mollusks.—Thomas Alcock.

Insects.—Edwin Birchall, Frederick Beauchamp, N. C. Tuely, R. D. Drewitt, Thomas Brown, J. B. Hodgkinson.

My own numerous descriptions of larvæ must wait until all other contributions have appeared: Entomologists who have so kindly assisted me must excuse a delay which is the necessary consequence of those papers appearing in my own name.

BOOKS RECEIVED FOR REVIEW.

'The Natural History of Tutbury.' By Sir Oswald Mosley, Bart., and Edwin Brown.

'The Birds of India.' By T. C. Jerdon. Vol. II. Part 1, containing the families Merulidæ, Brachypodidæ, Sylviadæ, Ampelidæ, Corvidæ, Sturnidæ, and Fringillidæ.

'A Spring and Summer in Lapland, with Notes on the Fauna of Lulea Lapmark.' By an Old Bushman.

'Microscopic Teachings.' By the Hon. Mrs. Ward.

Breeding of Varieties.—In 1860 I captured a pair of Biston betularia *in côp.*; the male quite black, and the female of the ordinary colour. From this pair I obtained a few eggs, and in 1861 these eggs produced eleven perfect specimens, of which eight were males and three females, six of which were black and five the ordinary colour. From a pair of black specimens I obtained eggs, the larvæ from which I fed upon sallow, as before, and the progeny, excepting a few I have given away, are now before you:—grandfather and grandmother; 11 children of ditto, 6 black and 5 ordinary colour; 41 children of black parents, 32 black and 9 ordinary colour; total progeny 52, exclusive of many specimens which did not fully develope their wings. Here we have the history of three generations of one family, and though we cannot draw any very accurate deductions from this experiment, still we may feel justified in saying there is more in variety breeding than some people admit; but from the facts before us I cannot see anything in favour of what is generally known as the development theory, for with black and white to start with, the produce is nearly even, and from two blacks (artificial, if I may so call them) the produce is not all black, as some expected. Again, Mr. Stephenson bred as many black as white ones. All that we can arrive at is, that varieties will produce varieties for a time, but, as in the case of the specimens before you, they then refuse to copulate, and no eggs can be got. It may be that other specimens or species would breed further than the third generation; but, drawing my deductions from past experience, I am inclined to the opinion that it is one of those wise, inscrutable provisions of Nature by which her original plan is kept in its original course, deviating sometimes, from causes we do not understand, but rarely, if ever, diverging so far that even a dull naturalist is at fault to place it. Mr. Gregson, who has long made the study of variety breeding his pleasure, does not say we can produce varieties *ad libitum* by change of food, as some people assert he does; he only says that if we change the food of larvæ the chances are that, amongst a great number bred, far more will prove varieties than if fed on their ordinary food or in a state of nature, and, from my own experience of variety breeding for the last four years, I have arrived at the same conclusion. When the question of variety breeding reduces itself into one of our acknowledged facts, and the "pooh, pooh!" of some of our contemporaries is forgotten, when men join to work out this singular question, and the results of a large number of experiments are brought together, then, and not until then, will it be safe to generalize on this question; but at that time, I have little doubt, we shall find that Nature always resumes her course [eventually], although she allows us to force her out [of it for a time].—*N. Greening, in 'Proceedings of the Northern Entomological Society.'*

Early appearance of Diurnal Lepidoptera in 1863.—Various notices appeared in the spring of butterflies seen flying about at a time when they are usually hybernating, but I do not recollect that any one has remarked the fact that most of the spring and early summer butterflies made their appearance considerably earlier than is the case in ordinary seasons, some of them anticipating their usual time by two or three weeks. I noted down the earliest dates on which I met with many of the common species.

January 31. Gonepteryx Rhamni, flying by a sunny hedge-bank. This species had been seen in the neighbourhood flying on Christmas Day.

February 13. Vanessa Io, flying in company with G. Rhamni.

March 3. Vanessa Urticæ, common.

March 21. Lasiommata Ægeria, just emerged from the pupa, in a warm lane: I have noticed four broods this season.

March 23. Pieris Rapæ, flying by a garden. Hybernated species plentiful.

April 1. Pieris Napi.

April 24. Pieris Brassicæ, Anthocharis Cardamines, Lasiommata Megæra and Lycæna Argiolus; the last named was out till June 15th, but worn.

April 25. Lasiommata Megæra, plentiful; and Chrysophanus Phlæas appeared.

May 2. Satyrus Pamphilus.

May 5. Argynnis Euphrosyne.

May 7. Leucophasia Sinapis, Thymele Alveolus and Thanaos Tages. T. Alveolus had evidently been out some time, as some of the specimens were worn: I had not before visited the spot where it occurred.

May 8. Lycæna Alexis.

May 18. Argynnis Selene; was still out, and in fine condition, in July.

May 27. Melitæa Artemis, common.

May 29. Pamphila Sylvanus. For years I have thought there must be some mistake about the reputed appearance of this species in May, and again in July and August. When, however, I took it in May, this year, I thought the matter was settled, and looked eagerly for a second brood, but was disappointed. The insect was common enough till late in June, but by the beginning of July had disappeared, and when P. Linea made its appearance, on July 8th, it was without its usual companion, and remained so. I am satisfied that there was no second brood of P. Sylvanus here this season; possibly there may be in warmer localities, but I am inclined to think that there is only one brood in the year, which appears earlier or later, according to the season.

June 20. Satyrus Janira, common.

July 17. To my great surprise, I met with a specimen of Arge Galathea in a rough field: I had not the slightest expectation of finding it in this neighbourhood, and it seemed still more remarkable to see but one specimen of so gregarious an insect. —*Charles Golding Barrett; Haslemere, November* 3, 1863.

Time of Emergence from the Pupa in Lepidoptera.—The Rev. J. Greene, in his 'Entomologist's Companion,' remarks that "There is no doubt many species have fixed hours of emergence from the pupa." It appears very probable that there is a particular time in the case of each species, of course liable to occasional variations. Thus I have observed that Smerinthus ocellatus usually appears about 7 A. M.; S. Tiliæ between 1 and 2 P. M.; Sphinx Ligustri about 6 P. M.; Biston hirtaria between 10 and 12 A. M. Some interesting observations might probably be made in this direction.—*John R. S. Clifford;* 21, *Robert Street, King's Road, Chelsea.*

Acherontia Atropos in Cambridgeshire.—About the second or third week of last September I purchased of a woman a fine coloured and perfect specimen of this singular species, which the woman's husband had discovered in his potato-field at Cherryhinton, in this county. The death's-head moth has not been of nearly so frequent occurrence this last year or two: about six or seven years since the species was prodigiously abundant, scarcely a potato-field but what produced its dozens of pupæ.—*S. P. Saville; Dover House, Cambridge.*

Abundance of the Larvæ of Sphinx Ligustri.—The larva of this moth has been unusually common in various places at the west end of London this season, occurring upon the privet and also upon the wild apple and pear. It was feeding much later than usual: since I first made the acquaintance of this larva, some twelve years ago, I have seldom seen it after the first week in September. This autumn I found it all through that month, and even took an unusually fine larva as late as the 3rd of October. The young larva of S. Ligustri is, I believe, seldom found. I have been disappointed in obtaining it myself, having tried both beating and searching in localities where I had no difficulty afterwards in obtaining the nearly adult larva. If, as has been supposed, its mode of concealment is merely to retire to the interior of the bush, it should be discovered by one or other of those methods. I am inclined to infer that it descends to the surface of the ground during the day.—*John R. S. Clifford.*

Larva of Chærocampa Porcellus near Chelsea.—I found three larvæ of Chærocampa Porcellus, feeding upon Galium aparine? in a lane on the outskirts of Chelsea, at the beginning of last August. When full grown it changes to a pupa on the surface of the ground, forming a slight cocoon of considerable size by drawing together the withered stems of the plant.—*Id.*

Statices versus *Geryon*. By the Rev. Edward Horton, M.A.

Although I agree with Dr. Staudinger (Zool. 8403) that "a young naturalist should, if possible, avoid" asserting that two similar insects are of the same species because they happen to be similar, I think that older naturalists are not without danger of falling into the opposite error, that of making out similar insects to be of different species. Perhaps the popularity of the Divorce Court, under the able administration of the late Sir Cresswell Cresswell, is beginning to have its effect in entomological quarters; for the case of Statices *v.* Geryon has been decided in a way which threatens a facility in dissolving the specific tie very dangerous at a time, when the very existence of that tie is called in question. I am no lawyer, but I think that the heading of this important case should rather be Statices *v.* Statices than Statices *v.* Geryon; and, with all respect to the judicial bench and the jury, who may have weighty reasons, not known to the world, for their decision, I have taken upon myself to review the evidence, as it has appeared in print in the 'Zoologist.' The earliest notice I can find is at p. 8403, where Mr. Newman quotes a long passage from Dr. Staudinger's Monograph of the genus Ino, published in 1862. The first statement in that extract will be accepted by all who are acquainted with the two insects under consideration: "This species (Geryon) is altogether less than I. Statices."

The next assertion that "there is scarcely any difference between the two sexes" of I. Geryon in size, does not agree with my observations. From the numerous specimens that I have examined, I should say that there is a noticeable difference, though not perhaps quite so great as in I. Statices. Individuals of each sex differ considerably from each other in size, and I have occasionally seen a female quite as large as a small male, but generally speaking the females are decidedly smaller than the males. In colour there seems the same variety in both insects, and I cannot see that the hind wings in I. Geryon "are more transparent than those of I. Statices," nor that they "appear somewhat blacker," which seems rather inconsistent with the greater transparency. With regard to the antennæ, which Dr. Staudinger describes as "shorter and stouter" than in I. Statices, I can only say that I cannot detect any difference with the naked eye; they appear to me in the same proportion to the size of the insect, and the result of an examination by a good microscope is, that the number of joints is the same in each, namely, 32 or 33; and the corresponding joints in each are of the same shape, as well as the pectinations. Whether the *number* of joints in the antennæ of Lepidoptera, irrespective of their shape, be a good specific distinction I cannot say. Curtis, in his description, illustrated by a very accurate anatomical drawing, of the antennæ of I. Statices, appears to think *not*, as he only mentions the joints of the pectinated portion, which are all similar, as "numerous," while he gives the number of the peculiarly shaped joints in the clavate portion as eight or nine; but great reliance seems to have been placed on mere number in separating Bombyx Callunæ from B. Quercus (Zool. 1656), the antennæ of the former being there stated to be 84-jointed, and of the latter only 64-jointed, though in the specimens that I have examined I find the number the same in both.

But to return: Dr. Staudinger further says, "I am the more inclined to think I. Geryon a good species, since the typical I. Statices is common near Vienna, which is almost the only locality where the real I. Geryon is found!' This is an argument for the distinctness of the two insects derived from their proximity to each other in a certain locality, and would do just as well, when we consider their very limited locomotive powers, for proving them to be of the *same species*. The same may be said of a sentence further on, in which the same argument is more fully set forth: "The important fact that for many consecutive years the two races have been found unchanged in character at a short distance from each other (I am not aware whether they have been found on exactly the same spot) is a certain proof that they are distinct as species."

The way in which I imagine the variety I. Geryon may possibly have originated is this. Some perfect specimens of I. Statices (one impregnated female would be sufficient) were caught up by a violent wind from a low meadow luxuriant in sorrel, and carried a mile or two to a dry hill-side clothed with Helianthemum. There the female deposited her eggs, and the young larvæ, after searching in vain for sorrel, at last put up with the Helianthemum, and lived upon it for generations; and, as Helianthemum is much less juicy than sorrel, they became a diminutive race, just as sheep and cows fed on mountains are smaller than those always pasturing in valleys. The non-roving character of the larvæ and the sluggish flight of the imago would both tend to keep them in the locality where accident had first deposited them, though but a short distance from their former home; and this isolation, from the necessity of breeding in, would still tend to dwarf the race, as noticed by Wollaston, Darwin and others. That this *may* have been the origin of I. Geryon is confirmed by the fact that, although Helianthemum is now its undoubted food, it *will* eat sorrel—its old taste for acids is not lost: "Naturam expellas furcâ tamen usque recurret."

The next notice is at Zool. 8468, where Mr. F. Beauchamp says, "On the question whether I. Geryon be a variety or a species, I will only observe that we get the normal I. Statices in plenty within a mile or two of the hills where I. Geryon abounds, but that I never took them in company, nor did I ever take any form intermediate between them." There is nothing here at variance with the theory just proposed, but rather in accordance with it. Mr. Beauchamp says he never took them in company; but Mr. Newman, after quoting Staudinger in the last passage, says "*I believe* that all three British species of Ino occur in company in Sussex, more especially on the south coast." This, of course, would be inconsistent with the above theory, and would go far to prove the distinctness of I. Geryon as a species, but it is not asserted as a fact, and requires confirmation.

The next passage is at Zool. 8606, a description of the larva of I. Statices by Mr. Newman, which I shall compare with a description of the same larva by M. Guenée, kindly sent me by Mr. Doubleday. There is a general agreement between these two descriptions, but there are the following details noticed by Mr. Newman and not by M. Guenée:—

1. That the black papillæ, described by M. Guenée as covering the whole body, are not discernible on the warts.

2. That a few long silky hairs are mixed with the bristles clothing these warts.

Also the following noticed by M. Guenée and not by Mr. Newman:—

1. A black spot on each incision along the dorsal vessel.

2. A series of black oblong spots along the subdorsal line.
3. That the hairs are mixed black and white.
4. The head black.
5. Second segment brown, bordered with purple in front.

In the following particulars the descriptions vary:—

Ground-colour of upper surface *yellow, Newman*. *Greenish* yellow, *Guenée*.

Claspers dingy yellowish white, *Newman*. Rather rosy, *Guenée*.

In the next passage (Zool. 8694) we have a description of the larva of I. Geryon by Mr. Newman, which agrees exactly with the same writer's description of that of I. Statices, except—

1. Head black (omitted in description of I. Statices).
2. Second segment dingy yellow in front, black and rather shining on the disk, which differs from M. Guenée's description of the same part of I. Statices.
3. The *yellow* of I. Statices is here *dingy* yellow, and there is this addition—
4. "The sinuous exterior margin of the yellow stripes is bordered with black, gradually shaded off into reddish purple."

I have no description of the larva of I. Geryon by M. Guenée to compare with this, but, in his description of the larva of I. Statices, before referred to, he has underlined those characters which, he says, distinguish it from I. Geryon. These, therefore, are all that we need consider, and are—

1. The *greenish* yellow.
2. "The black spot on each incision along the dorsal vessel."
3. The "black oblong spots along the subdorsal line."
4. The mixed black and white hairs.

Now it is remarkable that these distinguishing characters, according to M. Guenée, are the very parts of the description which are altogether omitted by Mr. Newman, who holds the same opinion as to the distinctness of I. Geryon, but evidently could not regard these characters as the specific distinctions, because he did not think them worthy of observation. What then are Mr. Newman's specific distinctions? I see no others but—

1. The black head, which M. Guenée truly ascribes also to I. Statices.
2. The colour of the second segment, which he could scarcely have intended to lay much stress on, as he does not describe that part in I. Statices.
3. The *dingy* yellow, as distinguished from the *yellow* of I. Statices;

but which is very little distinction, if we allow *that* yellow to be "*greenish* yellow" with Guenée.

4. The black border along the sinuous exterior margin of the yellow stripes, which might very well be the same as "the series of black oblong spots along the subdorsal line" noticed by M. Guenée in I. Statices. A sinuous black line might easily, to another observer, have the appearance of an *interrupted* black line, or, in other words, "a series of black oblong spots."

In the descriptions of the pupæ of the two insects (Zool. 8608, 8695) there is no marked difference except a "longitudinal series of darker dots" in I. Geryon, not noticed indeed in I. Statices, but not therefore necessarily wanting in that insect.

The egg of I. Geryon is pale yellow, but that of I. Statices is not described.

In habits the two insects exactly agree, as far as is known. The egg is laid about the same time. The larvæ of both hybernate (I have just ascertained this with regard to I. Geryon). They double up and fall off the food-plant when touched in the same way. They are full fed at the same time, remain the same time in pupa, and emerge together into the imago state.

I offer these remarks with great respect for the authorities named, and not at all in a controversial spirit, but merely for the sake of nature and of truth. My position is this, that there is no greater evidence at present in favour of the diversity than of the identity of the two insects. Good entomologists have adopted either opinion, and the instance mentioned of H. Lederer (Zool. 8403), who, from a very strong opponent of Ochsenheimer's view, afterwards became its advocate, ought not to be forgotten. We are naturally prone to hasten the settlement of all difficult questions; we do not like suspense. But in the study of nature especially, impatience is to be checked. "Most haste worst speed" is nowhere more true than here, and it appears to me that to adopt I. Geryon as a distinct species on the evidence examined above is a very hasty proceeding indeed. Let the living larvæ be examined together at different stages of growth. This can easily be done next spring. Let the experiment of interbreeding be tried with the two insects. Let I. Statices be fed on Helianthemum and I. Geryon on sorrel. Let it be ascertained by entomologists residing near localities of both races whether they are ever found in company, or at what distance from each other. These are all interesting subjects of inquiry, and their elucidation will doubtless contribute something towards the true solution of this question.

It may be thought, from the theory that I have proposed, that I hold the opinions of Mr. Darwin. This, however, is not the case: I am one of the old school of naturalists, with regard to the permanence of species, and it will be seen, from what I have said, that I am inclined (at present and until further evidence) to regard I. Geryon as an offshoot of I. Statices, differing in nothing from the original stock, except *size*.

I would anticipate one objection that might be made against the theory advanced above, by eliciting information from the readers of the 'Zoologist' as to any other instances which may have come to their knowledge (for I am persuaded that this of I. Geryon cannot be a solitary one) of diminutive races among Lepidoptera. Mr. Wollaston, in his work on the 'Variation of Species,' before alluded to, mentions several British beetles that have suffered in this way, and one foreign butterfly, Vanessa Callirhöe, as being permanently smaller in the island of Porto Santo than in Madeira. The only other probable instance that I can call to mind among British Lepidoptera is that of Peronea potentillana, which Mr. Doubleday considers to be a small variety of P. comparana; but perhaps there are others which more experienced entomologists can supply, and their doing so will tend much to throw light on this interesting subject.

Since writing the above, I have examined the hind wings of both insects under the microscope, and I find the fact to be the direct contrary to Dr. Staudinger's statement. The scales, which are black and of precisely the same shape in each case, are scattered much more thinly over the transparent space in I. Statices than in I. Geryon. The number of scales appears to be about the same on the wings of both; but, as I. Geryon is smaller, the scales are closer together, which is just what one would expect in a dwarfed specimen, and is strongly in favour of the identity of the species.

E. HORTON.

Lower Wick, Worcester,
November 20, 1863.

Ptilodontis plumigera in November.—On the 27th of November I found a newly bred specimen of Notodonta-Ptilodontis plumigera in one of my breeding-cages. Is not this a very unusual period for the appearance of any of the Notodontidæ? The room in which the insect was bred has no fire-place, and is rather calculated for retarding than forcing insects.—*W. O. Hammond; St. Alban's Court, near Wingham, November* 30, 1863.

Description of the Larva of Oporabia filigrammaria.—Eggs received from Mr. J. Swinden, of Sheffield, hatched 17th of February; the young larvæ chose for food willow and sallow; went to earth about 10th of April. In figure this larva is stoutish and smooth; the general colour is rich velvety green; the belly pale whitish green. Head and second segment shining, with a blackish tinge. On each side of the dorsal vessel is a line of pale yellowish green; the subdorsal and spiracular lines are sulphur-yellow, the latter being the more distinct, and between them is a faint interrupted yellowish line. On the back of each segment the tubercles appear indistinctly as minute yellow dots. Segmental divisions orange-yellow. Spiracles yellow, and between them and the region of the belly are a few speckles.—*Rev. J. Hellins, in 'Entomologist's Annual' for* 1864, p. 137.

Description of the Larva of Cidaria sagittata.—The eggs, which are of a pellucid violet tint, subsequently changing to orange, are laid in little bunches of four or five, on the seed-vessels of Thalictrum aquilegifolium, and more rarely of T. flavum; the larvæ, orange-coloured when they first emerge, are hatched about the 1st of August, and have a habit of biting through the stalks of the food-plant and feeding on the leaves, which they have thus caused to become partly withered: they feed through the month of August, and some of them feed far into September. The full-grown larva is rather short and stout, generally being in a hump-backed posture, but not curling in the front segments. The head is small and sunk in the second segment; the skin on the front and hind segments is wrinkled, whilst across each of the segments, from the fifth to the 10th (both inclusive), there runs a handsome elevated ridge, which, on each side of the spiracular line, meets a longitudinal ridge, and forms with it a lateral hump. The ground colour is a pale sulphur-green, along the region of the spiracles, running into a rich pink, edged below with black, which blends into a broad lateral stripe of dark olive; the belly is of the pale ground colour; on the front segment are four dorsal stripes of a full green; the transverse dorsal stripes are of a velvety olive-green, softening anteriorly into the pale ground colour, with a tinge of pink, and becoming black at the sides. The hind segments are blackish green on the back, and much suffused with pink. The spiracles are pink, six of them being enclosed in the black of the transverse ridges. The pupa, which is enclosed in a slight earthen cocoon, is remarkably short and stout, and much tinged with green. This larva and its history were discovered by Mr. Alfred Fryer, in his garden at Chatteris, in Cambridgeshire.—*Id.*

Dianthœcia capsophila not a Species.—The President commenced the proceedings of the Northern Entomological Society, by remarking, "I wish to call the attention of the Meeting to a letter that appeared in the 'Zoologist' (Zool. 8471) from Mr. Barrett, in which he states that the Northern Entomological Society, or, at any rate, a certain portion thereof, ventures, from the examination of a single specimen, to decide that the Irish species of Dianthœcia is only a variety of D. carpophaga. Now I wish this Meeting to understand that a certain portion of the members present at that Meeting did not come to that decision on the examination of a single specimen, whatever the other portion might have done. I, for one, was at that Meeting, and gave it as my opinion that the Irish insect was only a variety of D. carpophaga. My reason for doing so was, that, after careful examination of specimens of the Irish insect, in Mr. Doubleday's and Mr. Bond's cabinets, and after seeing some of Mr. Barrett's, Mr. Cooke's, and Mr. Birchall's, and my own specimens, I came to the conclusion that the Irish insect called D. capsophila was only the Irish form of D. carpophaga.

Since that Meeting I have had the pleasure of seeing many more specimens of the Irish insect, some of them bred, and I am now more convinced that I am correct in the opinion I gave at that Meeting, and I have not the least doubt but that when the larva of the Irish insect is seen by those who know the larva of D. carpophaga, it will be found identical with the larva of that species. If it is a good species, how is it that none of our great English entomologists will point out the difference between the two insects? for I cannot believe in a species without distinct characters, which I have looked for, but have failed to find. I grant that the Irish specimens differ in colour; they are darker, and have little, if any, of that ochreous colour which we find more or less in the English specimens; but this, to my mind, is not sufficient to make a species, for when we look at the variety of colour, from light yellow to dark brown or dark ochreous-brown in the English specimens, we may surely go one shade further, and then we have the colour of the Irish insect, but when we come to compare the two insects in the markings, they are exactly the same, and not a mark on one that is not to be found on the other. They feed in the same plant, at the same time of the year, and appear together. Another thing in favour of their identity is, that though Mr. Birchall and Mr. Cooke have taken the species in Ireland and bred it from larvæ, they have neither taken nor bred the ordinary form of D. carpophaga in or from Ireland. This seems very strange to me, for I believe that wherever the food-plant of D. carpophaga grows the insect has been taken. Again, Mr. Birchall gave me a description of the larva he bred his Irish insect from, and he described the larva of D. carpophaga exactly. I have now stated why I think the Irish insect only a variety of D. carpophaga. I have freely given my opinion on this subject, and shall be glad to hear others give theirs. I am aware that, after all, I may be mistaken, and if, when the question is re-opened, I should be wrong, I shall at once own my error. In giving our opinions we avail ourselves of the advantages we possess in having a Society amongst ourselves, but at the same time let me say that when we give our opinion let us by all means respect the opinions and prejudices of others, and whatever we say or do let us say or do it without ill feeling towards any one. *I believe we may all express an opinion without giving offence to any gentleman, if we do so in a generous spirit, and without trying to make ourselves great at the expense of others. This is a sad mistake, and will always return to the man who attempts to do so; for depend upon it that no man ever made himself great by taking any credit to himself that belonged to another.* Now, in all fairness, and with the best feeling, may I ask that some of our leading entomologists in England will be kind enough to point out the difference between the Irish insect and the English D. carpophaga. If they will give us some distinctive character I am quite sure they will be conferring a great boon on us and Science generally. I will not now say anything about the attempted difference being made out in the 'Zoologist' (Zool. 8292), for the differences pointed out apply as well to the dark English specimens of D. carpophaga as they do to the so-called D. capsophila, and the gentleman had then only seen one specimen, which I think is not sufficient for anyone to give an opinion upon. I must confess that I am very much disappointed this evening, for I was led to expect, from what is printed on the cover of the 'Zoologist' for the present month, that many members of the Society would protest against the decision of the Meeting held in December last. I was in hopes that we should have had some letters from those members who do not agree with the decision of that Meeting, stating the reason why they do not; and of course they would have been expected to point out the difference in the two insects, which is the very thing we want some of our members to do. In the 'Zoologist' (Zool. 8472) Mr. Newman remarks, "I think that the Secretary of the Society would do well not to give any decision as that of the Society collectively, but assign each opinion to the member who expressed it." I quite agree with Mr. Newman on this point, so that the opinion of any member will only go for what it is worth; but, at the same time, I must say that *our Secretary was quite right in the report, in stating that the Society decided the question, for I see in the 'Zoologist,' 'Proceedings of Societies,' 'Entomological Society,' which means the report or proceedings of a Meeting. If so, then the Meeting was the Society, and if the Meeting was unanimous in a decision, then the Meeting being the Society for the time being, it is quite correct to say that the Society settled the question."—Noah Greening, in 'Proceedings of the Northern Entomological Society.'*

[With regard to the specific distinctness or otherwise of Dianthœcia capsophila, I am perfectly willing to bow to Mr. Greening's judgment, or to leave the question *sub judice*, for I do not conceive it possible that an error so grave as the making a variety into a species, or sinking a species as a variety, can be maintained for any length of time in this age of searching inquiry, but I quote the paper at length and *verbatim*, because, as a lover of fair play, I was desirous of learning what could be said in reply to Mr. Barrett's observations (Zool. 8471) on the same subject, and no other reply had previously reached me that I could possibly print. Then, again, I have italicized two passages to which I particularly wish to invite attention: the first contains a sentiment which I most heartily endorse; the whole paragraph is severe, but not more so than was absolutely necessary; and I cannot sufficiently eulogize the courage and good sense of a President who dare so express himself. With the second italicized paragraph I also entirely concur: I regard the Proceedings of an authorized Meeting as the Proceedings of the Society: what I object to is that the responsibility and the merit of certain individual opinions is taken from the individuals expressing them and given to a collective body. I never recollect seeing such a decision recorded in the Proceedings of any other scientific meeting: if the Secretary had informed us that the Rev. Joseph Greene, or Mr. Doubleday, or Mr. Bond, or Mr. Birchall, or any other competent entomologist, expressed decided opinions on a question of this kind, we should all peruse those opinions with respect, but a Society forms no decision of the kind reported.—*E. Newman.*]

Description of Dianthœcia Barrettii of H. Doubleday.—Thorax fuscous, mottled with whitish. Abdomen fuscous, conical in the female, the ovipositor slightly produced. Anterior wings fuscous, with a pale patch at the base, an oblique interrupted pale fascia extending from about the middle of the costa to the anal angle. Posterior margin of the wings also pale, bordered by an indistinct paler striga, forming a rather obscure W towards the anal angle. A very distinct black line, emitting a branch, connects the ordinary strigæ, as in Hadena Genistæ; the branch from this line divides the oblique pale fascia into two unequal portions, of which the upper is the larger; cilia spotted with fuscous and white. The whole of the anterior wings are thickly irrorated with minute fuscous dots, which renders all the markings very undefined; the ordinary stigmata are indicated by two pale spots. Posterior wings fuscous, with paler strigæ. Antennæ of the male ciliated. This conspicuous and singular species was discovered near Dublin by Mr. Barrett, who captured a fine specimen of the male; a female was subsequently taken by Mr. Birchall. I cannot identify it with any described European species, and have great pleasure in naming it after its discoverer, a very zealous and persevering entomologist. From the pointed abdomen of the female it appears to belong to the genus Dianthœcia, but seems, in some respects, intermediate between this genus and Hadena. In the disposition of the markings it bears some resemblance to Hadena contigua, but the colours are very different. It cannot possibly be confounded with any other British species.—*Henry Doubleday, in 'Entomologist's Annual' for* 1864, p. 124.

Description of Luperina Guenéei of H. Doubleday.—Thorax pale griseous, mixed with white. Abdomen very pale. Anterior wings pale testaceous, irrorated with black and white atoms; an indistinct interrupted pale striga before the middle, then a second arcuated striga composed of black lunules, edged externally with whitish; the first striga terminates in a rather conspicuous black dot on the inner margin of the wing; the ordinary stigmata are placed between these strigæ, the reniform one being distinctly edged with white. Between the black dots on the inner margin of the wing and the thorax is a slender black line. Hinder margin pale testaceous, with an indistinct undulating pale line, commencing at a pale patch on the costa near the apex. A distinct row of black marginal lunules; cilia spotted with deep and pale fuscous. On the costa near the apex are two oblique white spots. Posterior wings pure white in both sexes, with black marginal lunules. Antennæ of the male rather strongly ciliated. Three specimens of this insect were taken in Wales, in the autumn of 1862; it is closely allied to Luperina testacea, L. Nickerlii and L. Desyllesi, but apparently distinct from either. The Rev. Henry Burney most kindly sent me his pair for examination, and allowed me to forward one of them to my valued friend M. Guenée, who informs me that it is identical with a specimen in his cabinet taken in France, which is described in his work as "Luperina testacea, *var.* A.," accompanied by a remark that it will probably prove a distinct species. In this opinion I coincide, and, with the consent of Mr. Burney, I propose to name it after my friend. It differs from L. testacea in the thorax and abdomen being slenderer, in the peculiar mottled appearance of the anterior wings, and in the absence of the three round white dots on the costa near the apex, which are so distinct in L. testacea and L. Nickerlii. The posterior wings in both sexes are of a much purer white than in L. testacea.—*Henry Doubleday, in 'Entomologist's Annual' for* 1864, p. 123.

[It is previously noticed by Mr. Doubleday, Zool. 8539.]

Description of the Larva of Eudorea coarctalis.—Greenish gray, with scattered short bristly hairs. Head light brown; a black plate on the back of the second segment. Spots black, shining; on the back large. In silken galleries, in moss on a stone wall. Full fed early in September. Pupa light brown, in a slight silken cocoon under the moss.—*Charles G. Barrett; Haslemere, Surrey, November* 3, 1863.

Curious Habit of the Larva of Tortrix costana.—Having frequent occasion, during the spring of the past two or three years, to pass through Aspley Meadows, near Warrington, I observed what I then took to be the accidental fracture of the footstalk, and consequent shrivelling of the terminal leaflet, of the queen of the meadows (*Spiræa Ulmaria*, L.). Struck by the coincidence of its frequent occurrence, I opened the rolled and shrivelled leaflet, on the next instance I met with it, when the brown larva of Tortrix costana wriggled out, fell to the ground and was lost. From other specimens similarly circumstanced I subsequently bred the straw-coloured T. costana. In each of the above instances the midrib of the leaf, which forms the footstalk of the terminal leaflet, was nibbled half through, and the leaflet itself hung down at right angles to the rest of the leaf. The probable explanation of this phenomenon is that the larva, finding its efforts to "screw" or draw together the edges of the leaflet unavailing, is prompted by its instinct to cut the midrib, thereby rendering the leaflet flaccid and easily contorted.—*John Peers; 64, Butter-Market Street, Warrington, November* 18, 1863.

Zelleria hepariella and Z. insignipennella the same Species.—During my stay at Witherslack, in Westmoreland, I took a good number of specimens of Zelleria hepariella and of the insect named Z. insignipennella. I had long suspected the were identical, from having taken several intermediate forms, until I at last beat out of a yew one of each *in cop.*, which confirmed my previous suspicions, and Z. insignipennella must therefore be struck out of our list. I took the variety Z. Haighii very scantily, and always small compared to some of the specimens of Z. insignipennella, which are full half an inch across the wings.—*J. B. Hodgkinson;* 31, *Christchurch Street, Preston.*

Affinities of Acentropus. By Edwin Brown, Esq.*

I have here, at the risk of wearying the reader, brought down the bibliography of the genus Acentropus, from the first published description of a species in 1791, to the present time; I will now draw a few conclusions in as concise a manner as I can.

Among the specimens described by authors under the name of Acentropus niveus, I believe there are confounded at least three species:—

1. Acentropus niveus = A. Garnonsii of Curtis. To this species will belong the specimens obtained by Mr. Dale and by Mr. Curtis at Glanville's Wootton, and by myself at Burton-on-Trent. The male has been well described and figured by Curtis. The female is apterous, and is furnished with long silky white fringes to its hinder tibiæ.

2. Acentropus Hansoni = Zancle Hansoni of Stephens. This species occurs in the neighbourhood of London and at Reading, and is undoubtedly the insect placed by Stephens, without any description, under the genus Zancle, in his 'Nomenclature.' The males of this species are almost identical with those of A. niveus, but appear, from the specimens kindly given to me by Mr. Wormald, to be slightly smaller and with the upper wings somewhat less cuneated; but the difference is so slight that if specimens of the two species once become intermixed in the cabinet, it is almost impossible to

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* Extracted from the 'Natural History of Tutbury,' by Sir Oswald Mosley, Bart., D.C.L., F.L.S., and Edwin Brown.

separate them. The female is, however, strikingly different; so far from being apterous, it is furnished with wings of twice the area of those of the male.

3. Acentropus Newæ of Kolenati. This form, from Kolenati's figure, I judge to be distinct. It will there be seen that the insect is smaller than A. niveus. The upper and under wings have different relative proportions, and the body is shorter and more hairy, whilst a very definite difference exists in the two blunt teeth on the hinder tibiæ, of which I cannot detect any trace in A. niveus. It is probable that A. latipennis of Möschler will prove to be the female of this species.

The larvæ of A. niveus may be found, when fully fed (I have failed in discovering them earlier), in silken cocoons, which are strengthened by small pieces of the leaves incorporated longitudinally in the fabric, and which are placed in the submerged axils of Potamogeton perfoliatus and P. pectinatus. The larvæ are of a light green colour, and possess every Lepidopterous character, and make no approach to the Trichopterous type. The pupæ are of the "masked" character, and the external case enables one to see clearly which will produce males and which females. The pupæ exhibit three remarkably prominent spiracles on each side.

The male imago of A. niveus sits sluggishly on any object that protrudes from the water where it occurs, or it flies slowly over the surface. I saw it on one occasion deliberately enter the water, and, after creeping down a pond-weed stem for an inch or two, it emerged again with unwetted wings. This act was probably done in pursuit of the virgin female. I regret, although I have bred the apterous female, I have never had an opportunity of studying its habits in a state of nature; but, from the long tibial fringes which it possesses, I presume it to be endowed with active swimming and diving powers, to enable it to deposit its eggs upon the food-plant, which, excepting in flowering time, is almost always totally submerged. For several seasons, owing, I imagine, to floods in July and August during previous successive years, I have been unable to find the insect in its old haunts. I have thus been disappointed in the hope I entertained of being able to complete its history from the egg to the imago, and hence the cause of the delay in giving my observations to the public.

With regard to the position of Acentropus in nature, the opinions of entomologists, as I have stated, have varied very widely. The following tabular statement will show the orders in which authors have placed it at one time or another:—

Neuroptera. Olivier, Latreille, and Stephens in 'Nomenclature.'

Trichoptera. Curtis, Stephens in 'Systematic Catalogue of British Insects,' Doubleday and Guenée.

Lepidoptera. Westwood, Kolenati, Haliday, Newman and Stainton.

The facts of the case do not any longer admit of doubt that the true place for the genus Acentropus is in the order Lepidoptera; but it is not so easy to say in what section of that great order it should be located. Misled by the great similarity in the habits of A. niveus to those of the various species of Hydrocampa, I at first suggested its being made to follow that genus in the Pyralidæ, and it has been so placed in the systematic part of the present work, which has been some time in type; but further consideration of the trophi of the perfect insect disposes me to alter that opinion. The absence of spurs on the tibiæ and the abortive state of the maxillæ place Acentropus entirely out of accord with the Pyralidæ; and these characteristics of the genus, in like manner, put it beyond the pale of the Yponomeutidæ or the Crambidæ, where Westwood and others have placed it. I am compelled, after long consideration of the problem, to seek for a place for it in the tribe Bombyces. It is true the British, and as far as I know the European, species of Bombyces differ widely from Acentropus, but it is very possible that some of the small and little-known exotic species may be found, when they shall have been thoroughly examined, to approach much nearer to our genus; at all events, there are two British families of that tribe which are more nearly allied to Acentropus than are those of any other tribe. These are the Hepialidæ and the Zeuzeridæ. With the Hepialidæ, Acentropus agrees in the general shape of its larvæ, in the absence of spines on the legs of the imago, and in the substitution for them of hair, in the want of a labrum, and in the almost total absence of maxillæ. With the Zeuzeridæ it agrees in the shape of larva, small development of maxillæ, and general form of the palpi, which in Acentropus may be either labial or maxillary.

Many objections to this classification of Acentropus may be brought forward, but I do not see any group in which the genus can be so well placed. Wherever they may be eventually located, the Acentropidæ must form a separate and distinct family. I would myself like to see the Psychidæ placed in the same section of the Bombyces; the Acentropidæ would then have neighbours possessing further points of affinity in addition to the absence of maxillæ, *viz.* in the possession of apterous females and case-bearing larvæ; and they would together form a subsection of the Bombyces, having many points of structure in common. Against this location of the Acentropidæ it may be urged, that the antennæ do not accord in character with the Zeuzeridæ, the Hepialidæ, or the Psychidæ; but the Hepialidæ resemble the Acentropidæ in the comparative simplicity of this organ much more than they do the other two families; and the grouping would not be more anomalous in this particular than is that of placing the Tineidæ with pectinated antennæ in the group of Tineæ, which nearly all possess filiform antennæ.

It is a singular fact the Acentropidæ, which resemble so much the Trichoptera in the perfect state, do not approach that order in the least degree in the preliminary stages. This curious circumstance forms another thread in the inextricable web of partial relationships which prevail throughout nature, and which renders the study of family groups so especially instructive and satisfactory; whilst, as soon as we step beyond the limits of family alliances, we are lost in the cross relationships of affinity and analogy that prevail on all hands.

[This history is preceded by a lucid summary of all that had been previously written on this most interesting subject: the species Acentropus Newæ, distinguished in the figure by the broad velvet-umber belt round the abdomen, is the one most commonly seen in cabinets: the beautiful belt has been mistaken for *grease* by some of our entomologists. I shall recur to Mr. Brown's valuable dissertation when I have more space.—*Edward Newman.*]

Beetles at Sea.—The following communication was read, and the specimens referred to exhibited, at the Meeting of the Manchester Natural History Club, September 28, 1863:—

No. 1. This small Longicorn beetle was observed by a friend of mine to fly on board a vessel 500 miles off the west coast of Africa, and settle on his person: a remarkable instance of the power of so small a creature to traverse a long distance when going with the wind.

No. 2. This African beetle (genus Apate, species not named) was observed by me to emerge alive from a wood carving of an idol brought many years previous from the west coast of Africa, and kept as a curiosity in the house of my friend, an African merchant, in Bristol. The larva must have been burrowing in the piece of wood from which the idol was carved, but never came to the surface until the last change into the imago state took place. It is well known that the larvæ of wood-boring beetles exist for many years in timber. This is a similar instance to one recorded, which took place in one of the Government offices, where a rare species of exotic Buprestis (another wood-boring tribe) was observed to emerge from a mahogany desk which had been many years in the office.—*J. A. Turner; Manchester.*

New Chinese Drypta.—I found yesterday a few specimens of the Chinese Drypta [mentioned p. 8904 of 'Zoologist'], and so am enabled to send you a rough description of him. Please let me know if you recognize the gentleman as a known species. Got a fine brimstone butterfly, too, which does not differ from Gonepteryx Rhamni, I fancy. The great Acherontia Atropos has been very common this summer, squeaking in our verandahs when most folks were nearly dead with heat.—*George Lewis; Kiu Kiang, November* 2, 1863.

Description of Drypta Lewisii of Newman.—Ferruginous-red, with the margins of the elytra broadly steel-blue, but terminating before the apex. Head thickly and rather coarsely punctured; eyes black and projecting. Palpi and mandibles red. Antennæ pitchy black or brown, with the long joint alone red at the base. Thorax thickly and coarsely punctured, cylindrical, hairy. Elytra somewhat elongate, widest towards the apex; interstices finely punctured; striæ punctate. Size slightly larger than D. emarginata, *Fabr.*—*Id.*

[Mr. Waterhouse having most kindly undertaken to compare Mr. Lewis's description with the species in the British Museum, but without success, I propose to give it the provisional, and I would hope permanent, name of its amiable captor.—*Edward Newman.*]

Hydnobius Perrisii taken in England.—

Hydnobia Perrisii, *Fairmaire, Ann. de la Soc. Ent. de France,* 1855, *Bull.* p. lxxv.

I have much satisfaction in adding this fine insect to our lists. The single example (a male) taken by M. Perris in the neighbourhood of Mont-de-Marsan, in France, on the authority of which the species was founded, seems to be the only recorded specimen, but I have recently detected three more (a male and two females) among some undetermined Anisotomidæ in the British collection of the Rev. Hamlet Clark, who has liberally presented a specimen to me and another to Mr. Waterhouse; they seem to have been taken some time ago, though in very fine condition, being mounted on the old-fashioned triangular point of card, but unfortunately I am not in a position to give any definite locality for them. The large size, short antennæ, and extremely coarse punctuation of this species at once distinguish it from its allies, though at first sight it is not unlike a very fine specimen of Anisotoma furva, from which its five-jointed hinder tarsi remove it generically. It seems to vary a little in size, the largest of Mr. Clark's specimens being a little over two lines in length; it is reddish brown in colour, shining, obese and rather short; the head and thorax are very strongly and rather closely punctured, the latter being decidedly transverse, margined on all sides, with the lateral margins slightly reflexed, its anterior angles obtusely rounded, and the posterior angles rounded off so that it is almost impossible to define the point of junction of the sides and hinder margin. The antennæ are very short, the first six joints being testaceous, and the club (of which the two penultimate joints are the largest) pitchy black; the apex of the mandibles is also pitchy black. The elytra are short-ovate, rounded at the shoulders, rather closely and very deeply and coarsely punctured, the punctures running into somewhat irregular lines near the suture and at the sides, but elsewhere being confused. The sutural space is rather darker than the rest of the elytra, the suture itself being blackish; the sutural stria is rather remote from the suture for the upper half of its length, and is thence gradually deepened and contracted until it nearly touches the latter at the apex. Fairmaire (*loc. cit.*) seems to lay great stress upon this peculiarity, which is, however, more conspicuously exhibited in the well-known H. punctatissimus. The tibiæ in both sexes are widened at the apex, and in the male the posterior femora are also very wide, the apex being somewhat emarginate on its lower side, with the angle nearest the body dentate; in the male also the hinder tibiæ are rather strongly arched. H. Perrisii differs from H. punctatissimus, its nearest congener, as follows:—It is much larger, broader, rather flatter, much lighter in colour, with the head and thorax much more deeply punctured, and the elytra not so closely but much more coarsely punctured; in the antennæ the club is also larger, and the seventh joint is pitchy black, instead of rufo-testaceous. The hinder femora in the male of H. punctatissimus are also wider, the angle on the lower side of the apex being more acute, and the dentation more pronounced.—*E. C. Rye; 284, King's Road, Chelsea.*

Locust in Scotland.—It may interest the readers of the 'Zoologist' to know that a locust was caught lately on the estate of Balfour, near here: it is at present in the possession of a man in the Miltown of Balyonie.—*Robert W. Leven; Kennaway Burns, Windygates, September* 28, 1863.

Sirex Gigas at Warrington.—On the 14th of August, on retiring for the night, I found on the window-blind in my bedroom a fine specimen of Sirex Gigas. It had evidently been attracted thither by the light, having entered the room by another window which happened to be open. In the week previous to this two fine specimens had been brought to Mr. Cooper at the Museum, one of which had been taken in a builder's yard, and the other in some houses erecting in the neighbourhood. Can any of your readers oblige me with any remarks on this species? Does it usually occur in similar localities? and, if so, under such circumstances as to induce one to conclude that it has been imported with the timber? Why should it be so unusually plentiful this season? All three of the above-mentioned specimens were females. Is the male less frequently met with?—*W. Kendrick; Warrington, October* 14, 1863.

[I am not aware that Sirex Gigas was unusually numerous last year, nor do I see any reason for supposing it imported in timber. This species breeds very abundantly in some of our fir plantations, the larvæ causing great mischief, by burrowing in the solid timber.—*Edward Newman.*]

Proceedings of Societies.

ENTOMOLOGICAL SOCIETY.

January 4, 1864.—FREDERICK SMITH, Esq., President, in the chair.

Donations to the Library.

The following donations were announced, and thanks voted to the respective donors:—'Sitzungsberichte der Königl. bayer Akademie der Wissenschaften zu Münnchen,' 1863, Heft 4; presented by the Akademie. Hewitson's 'Exotic Butterflies,' Part 49; by W. W. Saunders, Esq. 'The Entomologist's Annual' for 1864; by the Editor. 'The Zoologist' for January; by the Editor. 'The Intellectual Observer,' No. 24; by the Publishers. 'The Athenæum' for December; by the Editor. 'The Journal of the Society of Arts' for December; by the Society. 'The Reader' for December; by the Editor.

The following addition by purchase was also announced:—Kiesenwetter, H. von, 'Naturgeschichte der Insecten Deutschlands.' Erste Abtheilg. Vol. iv. Part 4.

New Member.

Herr G. Semper, of Altona, was ballotted for and elected a Foreign Member.

Alteration of Bye-Laws.

A requisition, presented to the President and Council, signed by six Members, was read; and it was announced that, in compliance therewith, a Special General Meeting would be held on the 25th of January, 1864, at 7 P. M., for the consideration of certain alterations in the Bye-Laws specified in the Requisition, and which were taken as read to the Meeting.

Exhibitions, &c.

The Secretary read a communication from the Lords Commissioners of the Admiralty, enclosing a copy of a circular letter from the Governor of St. Helena, respecting the ravages committed in that island by white ants. It was therein stated that the insects were, it is supposed, accidentally introduced from the coast of Guinea about twenty years since; that almost every dwelling, store or shed in Jamestown, containing nearly 4000 inhabitants, has been seriously injured by them, involving, in many instances, complete ruin and abandonment, and imperiling the lives of large numbers of the poorer classes, who are still living in houses of doubtful security: the Governor was especially anxious for detailed information as to the most successful mode of finding the ants' nests and effectually destroying those receptacles, and as to the description of timber which has proved to be the least susceptible of injury from the insect, and the average market price of that timber at per cubic foot.

Gen. Sir J. Hearsey, after detailing some of his own experiences in connexion with white ants in India, said that the nests must be sought in the plains, for if once the ants effected a lodgment in the walls of a house, the walls themselves must be taken down before the insects could be eradicated. He thought the best preventative of their attacks was to steep the timber, before building, in a solution of quick-lime, and completely saturate it therewith; whilst store-boxes, furniture, and small articles should be painted or coated over with a solution of corrosive sublimate.

Mr. E. W. Robinson said that, on the Indian railways, the plan was to make the sleepers of kyanized timber, *i.e.* timber to which a solution of creosote had been applied; it was, however, found insufficient merely to dip the wood or coat it over with the solution, but the whole block must be impregnated with the creosote, which, in fact was forced through the timber by the application of hydraulic pressure.

Mr. Bates said that the houses on the banks of the Amazon were not much infested with white ants, which he attributed, in a great measure, to the use of a very hard wood, called Acapù: it was the habit to rest store-boxes, &c., on sleepers or cylindrical pieces of that wood, which in many cases afforded sufficient protection. When the white ants had effected an entry into the walls (which in the Amazon country were principally composed of upright posts, with cross laths, filled up with mud, and covered with lime or cement), he had found it an unfailing remedy to fill up the holes in the walls with arsenical soap; pure oxide of arsenic might be used, but that of course was attended with danger: the arsenical soap was cheap, and might be diluted with water, and boxes, &c., washed over with the solution. The most effective method would doubtless be to completely saturate and poison the timber, as General Hearsey had mentioned with respect to the quick-lime.

A conversation subsequently took place on the habits of the Termites, the principal speakers being Gen. Hearsey, Mr. Bates and Prof. Westwood. In the course of the discussion Mr. Bates expressed (though with some hesitation) an opinion that the copulation of white ants occurs on the surface of the earth, and not, as was commonly supposed, in mid-air.

Mr. Newman exhibited a series of coloured drawings, life-size and magnified, of larvæ of the genus Anticlea, admirably executed by Mr. Buckler.

Captain Cox also exhibited a large number of drawings of Lepidopterous larvæ, exquisitely coloured by Mrs. Charles Cox: he also read the following:—

Notes on collecting Lepidopterous Larvæ.

"I have now for some years been collecting larvæ of Lepidoptera for Mrs. Charles Cox to colour, and I may mention that in our neighbourhood there has been almost an entire failure, even of the most common kinds, during the past two years, so that we have done comparatively little.

"To those unacquainted with larvæ it may appear an easy matter to collect them and recognize their forms; but so much do many larvæ resemble each other that experience shows that it requires a large amount of study and constant practice to be able only approximately to say to what kind of moth such and such a larva belongs. We have found that no hitherto-known scientific arrangement could assist us in deciphering rapidly, after a hard day's or night's beating and collecting in a favourable season, the various captures made; so we have been obliged to have recourse to a conventional system, which has assisted us materially. We divide all known larvæ into three great classes: the Hairy or Spined, the Smooth-skinned and the Looper.

"The Hairy or Spined we subdivide into those thickly covered and those moderately covered or tufted (we do not take account when the hair is only sparsely seen). Each of these subdivisions is again subdivided into the colours, brown or reddish, black or very dark, and yellow, green or gray.

"The Smooth-skinned are divided into those with a caudal spike, and those without; these are subdivided under colours, green or yellow, brown or reddish, black or very dark. Each of these divisions is again subdivided into the striped, the lined longitudinally and the plain.

"The Loopers are divided into those with 10 legs (perfect loopers) and those with 12 legs (imperfect loopers); and these are subdivided in the same manner as the two divisions of the Smooth-skinned.

"We keep a book in which is entered a description of the larva to be drawn; to this a numeral is attached: the larva is placed in a case, and on this, as well as on the drawing, the same number is marked. We then patiently await the arrival of the imago, to verify the name of the larva.

"In prosecuting our work, no name is affixed to our list until we are certain of the insect by its appearance in the breeding-cage. It is this great anxiety to verify, by actual fact, every insect that we find or is sent to us, that causes such an infinity of trouble; for it is painful, from one cause or another, to find how often our hopes are baffled by the untimely death of the larva or pupa, and then another year or two must pass away before we may obtain specimens again. Thus we have now considerably more than a hundred drawings unnamed, and consequently unregistered in the finished series.

"In breeding larvæ, some feed only at night, others in the direct sun-light, others at any time: care must be taken to favour each peculiar habit; if not, failure will ensue. Also, as some bury themselves in the earth, either to hide or to change into the pupa state, others spin a cocoon on a branch, others on the surface, collecting the loose material around; so in every case the insect ought to have the means of following its natural instinct. Thus, peat or broken turf and white sand make a good soil for the larvæ to retire into; this ought to be covered with close clean moss, free from insects, and kept moderately damp, and with a few upright pieces of wood for the insect to stretch itself upon after feeding, as we observe it is the habit of the nocturnal feeders to lie at full length for a short time after their evening diet.

"In seeking nocturnal feeders, generally but few make their appearance until about an hour after sunset; on the low herbage and banks the lamp and bent position must be the order of search; on spare and leafless brushwood the light will detect the insect, either feeding or at rest; but amongst brushwood, when it can be used, an inverted umbrella will save much time, and a quick tap with a stick will cause the larvæ to drop off into it. The lamp should be strapped round the waist. Many small larvæ, after feeding, hang suspended by a silken thread; all these the umbrella will receive.

"During the night or day the quick eye must be ever ready to see the nibbled leaf, the exuvial deposit, the web or any other sign of insect presence. It was by examining the entrance of a wood, by the light of my lamp, that I discovered a piece of exuviæ; on further search I came upon a number of larvæ of Vanessa Cardui, before which time I had never seen in this neighbourhood the caterpillars, and the perfect insect but once. I found them feeding on the cudweed (*Gnaphalium sylvatica*): I have not seen this given before as its food-plant.

"In collecting by day, a large sheet spread under the trees at the proper season of the year, and the trees beaten by a long pole, will generally send down many larvæ.

"Thus the sheet and umbrella by day, the umbrella and lamp by night, a quick eye and a strong frame will be sure to meet with success.

"There are other larvæ, some of which mine in the leaves, others in roots or stems of plants, or enclose themselves by drawing the ends of a single leaf or many leaves together. There are also many larvæ that rarely appear above ground: these are to be obtained only by digging them out; therefore, whenever you have an opportunity, ask the men turning up the soil to save all the 'bugs' and 'slugs' they find; for by these names only are they known by our unenlightened clodhoppers.

"Mrs. Charles Cox has now completed 170 coloured drawings of larvæ, the names of which are correctly authenticated, with about 120 not yet named. We are most anxious to continue our work, and we shall be indebted to our entomological friends if they will contribute to our wants. I need not say how pleased we shall be at all times to exhibit the progress of our work, and to forward lists to any Members of our Society who may desire to give a helping hand."

Prof. Westwood exhibited a selection, containing several novelties, from a collection of Coleoptera sent to this country from the River Shire by the Rev. Henry Rowley (attached to the Oxford and Cambridge Mission to the Zambesi); and remarked upon the identity of many of the insects from Zambesi with those from Mozambique. One of the new species exhibited, belonging to the Cetoniidæ, was very remarkable for the variation in colour in the different individuals.

Prof. Westwood also exhibited a specimen of Hylotorus bucephalus, *Schönh.*, one of the Paussidæ; and read the following descriptions of three new species of that family:—

1. Cerapterus Kirbii, *Westw.*, n. sp.

Subangustus, prothorace capite vix latiori, subquadrato, angulis anticis rotundatis, elytris pone medium latioribus; glaberrimus et lævissimus; capite inter oculos biimpresso; antennarum clava 9-articulata, subangusta, lateribus parallelis, articulo basali clavæ parvo; prothoracis lateribus acute marginatis; rufo-piceus, prothorace rufescenti, lateribus elytrorum cum macula ovata prope angulos posticos apicibus, suturaque lutescentibus; femoribus anticis subtus concavis; pedibus omnibus (tarsis piceis exceptis) corporeque subtus magis rufescentibus, nitidis.

Long. corp. lin. 3⅓.

Habitat in Natalia. D. Guienzius. In Mus. Hopeiano Oxoniæ.

2. Paussus Spencii, *Westw.*, n. sp.

Oblongus, subdepressus, subnitidus, castaneo-rufus; elytris (basi apiceque exceptis) nigris; minute punctatus, punctis setas luteas emittentibus; capite antice emarginato et impressione longitudinali notato; antennarum clava reniformi, subdepressa, margine antico acuto, postico supra in medio impressione semiovali distincto; prothorace capitis latitudine, bipartito, angulis lateralibus partis anticæ rotundatis, disco hujus partis inermi; medioprothoracis excavatione profundo impresso; elytris subangustis; femoribus tibiisque omnibus compressis sublatis.

Long. corp. lin. 2¾.

Habitat in India Orientali? In Mus. Hopeiano Oxoniæ.

3. Paussus Curtisii, *Westw.*, n. sp.

Elongatus, subcylindricus; lævis, subopacus totas obscure rufus; antennis pedibusque granulatis; capite supra lineis duabus angulato-elevatis longitudinalibus anticis; alterisque duabus obliquis verticalibus (tuberculum medium includentibus), carinato; antennarum clava gracili cylindrica, apice incrassata, subclavata et 3-denticulata; prothorace bipartito parte antica in medio canaliculata margineque postico acuto; impressione magna quadrata mediana ad latus utrinque producta; elytrorum singulo prope marginem lateralem tuberculis duobus glabris (uno ante medium altero versus angulos posticos) instructis; tibiis omnibus subangustis, subcylindricis.

Long. corp. lin. 4.

Habitat in Natalia. D. Gerrard. In Mus. Hopeiano Oxoniæ.]

Paper read.

Prof. Westwood read a paper entitled "Descriptions of new Lucanoid Coleoptera," supplemental to his recent Memoir on Lucanidæ published in the 'Transactions'; the species described were all exotic, and illustrated with figures.

New Part of the 'Transactions.'

A new Part of the 'Transactions' (Third Series, Vol. i., Part 8), being the fourth quarterly Part for 1863, was on the table.—*J. W. D.*

The Crocodile: Herodotus the Father of (*Natural*) *History.*—In Mr. Petherick's interesting account of the crocodile in the White Nile district, reprinted in the 'Zoologist' (Zool. 8833) from the 'Field,' that enterprising and well-known African explorer casually writes, "Cuvier observes that of all animals, the crocodile attains the greatest dimensions, considering its size at birth." But as this observation was made, more than 2000 years before Cuvier was born, by another great African explorer, even by Herodotus, and as the Natural History attainments of that invaluable historian are often ridiculed and despised by modern *savans*, as I think very unnecessarily and often most undeservedly, it is only fair to give him credit for a fact, which he, first at any rate of all extant writers, recorded; and Mr. Petherick will, I am sure, excuse me for correcting the name of his referee, and for pointing out the true author of the observation alluded to. The passage occurs in Book II. chapter 68, and is as follows:—"Of all known animals, this is the one which from the smallest size grows to be the greatest; for the egg of the crocodile is but little bigger than that of the goose, and the young crocodile is in proportion to the egg; yet when it is full grown, the animal measures frequently seventeen cubits, and even more." Perhaps, while calling attention to the zoological information imparted by the father of history, I may observe that, though undoubtedly sometimes imposed upon by his informants, in this as in other subjects, and at times over credulous, yet he does impart much that is of the deepest interest to us, of the various members of the animal kingdom, as known in those early days. Indeed, it is not impossible that, as in the kindred science of Archæology, deeper investigation and more accurate research have served to verify even the minute details recorded by Herodotus of the works and domestic life of the various nations he described; so in Zoology, as we learn more of the vast unexplored districts of Central Africa, for example, of whose Natural History we are still profoundly ignorant, we may perchance at length discover some foundation for assertions which we have hitherto declined to believe. But, at any rate, I maintain, without fear of contradiction, that, even as naturalists, we are indebted to Herodotus for much that is of exceeding value to us; and that, remembering the numerous popular delusions with regard to members of every department of Zoology, even now rife in this nineteenth century, and in this highly civilized country, and that too amongst men of education as well as intelligence, it is rash to launch the shaft of ridicule against the credulity of our earliest historian, recollecting the famous adage, that they who live in glass houses should beware of throwing stones.—*Alfred Charles Smith; Yatesbury Rectory, Calne, November* 5, 1863.

Frogs climbing Trees.—In answer to the inquiry of the Rev. C. A. Johns (Zool. 8861) as to whether any of your readers have observed frogs climbing trees, I beg to say that, although I have never had the good fortune to observe them in actual progression up trees, I have frequently found them in, apparently to them, inaccessible places, such as the tops of pollard willows, in the vicinity of streams—situations, in fact, which could only be attained by climbing. The common toad is also, I should say, an adept in climbing, having often found them in the nests of small birds, in hedges, and, sad to record, often incubating (?) most recently emptied egg-shells. I am a great friend to toads, and therefore, even with such strong circumstantial evidence before my eyes, very loath to blame them as the actual perpetrators. Probably, from the well-known fact of their climbing, might have arisen the expression, *vulgo*, "Did you ever observe a toad hedging?"—*Henry Reeks; Manor House, Thruxton, December* 18, 1863.

Climbing Propensity of Frogs.—In the 'Zoologist' for December (Zool. 8861) there is a communication from Mr. Johns concerning the climbing powers of the frog. I have myself observed a very similar instance. In one of my fern-cases I had a small specimen of the common frog, which was in the habit of mounting the fronds in pursuit of flies, &c. He used to climb, in the manner described by Mr. Johns, up the middle of the upper surface of the fronds (which were often nearly vertical), placing the fore and hind feet alternately on the successive pinnæ of the frond. The motion greatly resembled that of a sailor ascending the rigging, only that the movements were of course performed slowly and leisurely, lest the fly should be disturbed. He would proceed in this manner until he arrived within a little distance of the insect, when he would make a spring, seldom missing his prey, though sometimes rolling over to the bottom with it. Should it happen to move to an adjoining fern before he was near enough to spring, he would follow it, climbing from one fern to the other in the most deliberate manner. He spent his time almost exclusively on the ferns, when he was of a beautiful bright yellow colour; but when he was on the soil his colour was a dull brown. Unfortunately my little pet, after above twelvemonths' confinement, succumbed during the early part of the autumn.—*Charles Adcock, jun.; Stafford Street, Birmingham, December* 4, 1863.

Capture of Coronella lævis in Dorsetshire.—It was in Dorsetshire last spring that I captured the new British snake. I well remember the day, and will endeavour to reproduce a portion of it for your entertainment. We are out to sun ourselves and taste the sweet pure air in the vicinity of Wareham. We saunter pass the tall elms that shelter the farmer's rick-yard, and behold the miscreant rats dangling overhead suspended by their tails from the branches (a mode of warning rats below much affected in these parts): we cross the fragrant fresh meadows, where village urchins have left traces of their idle industry in the shape of broken daisy chains, withered cowslips and the scattered leaves of "lords-and-ladies." On the foot-path lies the mangled form of hapless shrew-mouse, snatched from the sheltering hedge-row by some passing cur. Under the trees the ground is strewn with fallen catkins and the brown glossy scales from bursting leaf-buds. Other forms and other sounds are all about and around us. The bee hums jubilant above the clover; the pretty lizard, flat and extended, pants on the broad hot stones, and the amorous toads sing guttural love-ditties in all the weed-choked ditches. We stoop to note some glittering object on the ground, when it speedily resolves itself into a vivacious long-bodied "Staph.," a brassy bright Amara or a mimic Hister motionless and feigning death. We pass a shady pool, where we see the fish-like Tritons swimming in the deeper parts, the little imp-like tadpoles wriggling in the weedy shallows, and in the open spaces between the leaves of the floating duck-weed the burnished Gyrini performing their circling, mystic, mazy water-dances. We cross a wild brown moor, where the timid brood of a lapwing is detected cowering among the "zedge-mocks," and we stand by the flag-fringed margin of the dark weir where the comfrey grows, and where the sluggish waters are green with arrow-heads and lily-leaves. Here stands the patient miller, rod in hand, fishing for roach at the mill-race, and here in the hollow trunk of an old black poplar the bats have chosen for themselves a citadel. And now, as we enter Holme Lane, long, green and fringed with trees, we note the undulating vertical flight of the green woodpecker (not uncommon in these parts), and observe in profusion the golden stars of Ranunculus Ficaria and the purple flowers of the Lamium, and, crossing the road, unconscious of his fate, my Coronella lævis! As I arrest his progress by a gentle pressure of my stick, he looks around, as it were reproachfully, but not indignant; for he neither hisses nor emits that most unpleasant odour peculiar to our Natrix. His harmless nature having been carefully ascertained (for having once been bitten by an adder, we were, so to speak, "twice shy"), and being taken up, he becomes somewhat spiteful, and attempts to bite the hand. Our worthy, but I must add ignorant, friends who are working in the fields readily distinguish my prize from the ringed snake and the adder, calling it the "whip-snake" or "viper," believing it to be extremely venomous, declaring, with looks of unfeigned aversion, that they "would na touch un for a hunder puns." These worthy but unsophisticated husbandmen, however, believe the lizard and the slow-worm to be equally venomous. Thinking the reptile would be interesting to many, he was shortly imprisoned in a tin box, with a bed of leaves to repose upon, and sent to Dr. Sclater for the Zoological Gardens, where I believe it may yet be seen.—*Arthur Adams.*

Notes on the Food and Parasites of the Salmo salar of the Tay.

By W. Carmichael McIntosh, M.D., F.L.S.[*]

The nature of the food of the Salmo salar has been variously estimated. Dr. Knox read a paper to the Linnean Society "On the Food of certain gregarious Fishes,"[†] including the salmon, in which it is stated, "From the time the salmon enters the fresh water it ceases to feed, properly speaking, although it may occasionally rise to a fly, or be tempted to attack a worm or minnow, in accordance seemingly with its original habits as a smolt. But after first descending to the ocean and tasting its marine food, it never again resorts to its infantile food as a constant source of nourishment." He goes on to state that nothing whatever is found in the stomach or intestines of the fresh sea-salmon but a little reddish substance, which he found to be the ova of some species of Echinodermata, and affirms that such is the sole food of the salmon in the sea. He combats the views of M. Valenciennes, who describes the salmon as voracious and a devourer of fishes, and maintains that there is not a single fact in the history of British salmon to support this opinion, and concludes thus:—"As to their feeding regularly in rivers, Mr. Young's experiments have negatived the assertion beyond all doubt." Yarrell gives the authority of Faber to support the assertion that it feeds on small fishes and variously small marine animals; and Dr. Fleming says,

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[*] From the 'Proceedings of the Linnean Society,' vol. vii. p. 145. Read December 4, 1862.

[†] The late Dr. Knox's invaluable paper with this heading is published in the 'Zoologist' for 1855, at p. 4709: it was rejected by the Linnean Society, and the learned author at once brought it to me.—*Edward Newman.*

"Their favourite food in the sea is the sand-eel." Others confirm the latter statement, and add that within flood-mark some salmon have been taken with two and some with three full-sized herrings in their stomachs.

In order to test the accuracy of the above conclusions with regard to the Tay, I examined the stomachs and intestines of upwards of a hundred salmon and grilse caught in the river from the commencement of the season in February to its ending in the September of this year. The salmon in its young condition feeds freely enough; for the stomachs and intestines of the parr from Stormontfield ponds are gorged to an extreme degree with beetles, flies, larvæ, larvæ-tubes and minute Crustacea, while those of the smolts are also well filled. Indeed the voracity of young parr has cost them their lives in instances where they have been too freely fed with small flies. Such being the nature of the fish from its earliest age, one is sceptical at first sight in regard to the statement that the grilse and salmon do not feed in fresh water at all. Professor Owen observes that the salmon, in common with many other fishes, when hooked or netted, empties its stomach by an instinctive act of fear, or to facilitate escape by lightening its load; so that the stomach, thus cleared of its contents, exhibits subsequently, for reward to the investigator, only the tiny animalcules which, having been swallowed with more substantial fare, escaped ejection by lurking in the gastric mucus. Were such the case an explanation would be readily given to the fact that the stomach of a fish which possesses so powerful a circulatory apparatus, and whose mucular tissues undergo a continual waste, should thus frequently be found empty. But if the salmon so fared we should expect to find the intestines at least well filled with the *débris* of such food, since it cannot very easily vomit it after it has passed the pylorus; and the very terror which impels it to disgorge in one case may entirely paralyse its efforts to do so in another.

In its usual condition the stomach is coated internally with a consistent white mucus of great tenacity, well calculated to hold any "animalcules" introduced from without; yet in few or none did such occur, cellulo-granular matter and oil-globules alone appearing. In ten instances only did remnants of fishes occur, and in all these nothing remained but vertebral columns, cranial and other bones, with the denser tissues, as the lens, &c. The number of bones in several cases showed that the animals had enjoyed a most ample repast, since they belonged to fishes from eight to ten inches in length, of what species I have not as yet been able to determine. Some pieces of cartilage, skin and pigment-cells seemed to belong to smelts, but most of the vertebræ belonged to larger fishes. The other kinds of food found in the stomach consisted of fragments of small fresh-water Crustacea, with a portion of a shrimp in one or two fishes, and an occasional piece of insect cuticle.

The duodenum is generally supplied in abundance with a less cohesive mucus of an orange tinge, and which is continued along the intestine. A constant accompaniment of this mucus, in almost all fishes, is a number of whitish or yellowish masses, extending far down the gut as a fragile knotted cord surrounded by the mucus—in some instances nearly to the anus. When a small portion of the white substance is put between glasses it is gritty, and is found to consist of a vast number of calcareous crystals like those of the triple phosphate. They are quite unaffected by ether, but effervesce much and disappear on the addition of hydrochloric acid. Some of the larger crystals showed roughness on their surfaces, as if smaller crystals adhered or had adhered to form compound masses; others had a somewhat radiate arrangement of the constituent crystals. They occurred in all portions of the intestine from the pylorus downwards, but not in the pyloric cæca, and appeared in the fasting as well as in the full-fed fish. The mucus which more immediately surrounded them had a fibro-granular aspect. The exact origin of these crystals is an interesting question. So constantly were they present in all conditions as regards food, that they could not have been much influenced by the varying state of the latter. The intestinal surface being an eliminating as well as a secreting surface, we may conclude that these crystals had their origin in fluids produced by the mucus membrane. The skeleton of this fish being of small specific gravity and deficient in earthy matter, it may be that the excessive elimination of salts keeps down the specific gravity; or again, the circulating fluid by this means may so adapt the bones to the varying density of the salt and fresh water that their specific gravity is in accordance with the medium. At any rate, and whatever be the explanation, the presence of these crystals is an interesting physiological fact. In a greater number of instances than in the case of the stomach, bones, lenses, and other dense textures occurred in the intestines; for they were present in several instances where no trace occurred in the former, and vertebræ could readily be detected as far down as the anus. In addition to those in which the *débris* of ascertained food in the stomach was found in the intestines, I met with crustacean hairs in several instances, Diatomaceæ, sand-particles, fragments of an insect, masses of solid fat, and portions of liver belonging to a fish like the sporling. In every other instance there was nothing in the intestinal tract but parasites, mucus, crystals, and an abundant supply of fatty globules and particles of all sizes. The rapidity and power of digestion in this fish is extraordinary; but there is no doubt that, if the fish had fed regularly, the food could never have disappeared so rapidly and well as to defy even a microscopic investigation of the intestinal tract throughout. It is, however, a mistake to suppose that they never feed in fresh water at all, just as it is one to suppose they feed voraciously, but vomit their food when captured. The true state of matters would seem to be that the salmon when in fresh water feeds rarely and at intervals, but not from want of voracity, as the contents of the stomachs above mentioned show; and further, that such food is occasionally found in its stomach from February till August.*

Capture of the Swordfish off Plymouth. — On the 17th of September last a specimen of Ziphius gladius was captured by some fishermen while engaged pilchard-fishing. It was entangled in their drift-nets and secured. The specimen was purchased by the Curator of the Devon and Cornwall Natural History Society, for the Museum at Plymouth. The dimensions of the fish are: — Entire length 7 feet 7 inches; length of sword, 2 feet 10 inches; girth 3 feet 4 inches. Its weight is 147 lbs. Although not a large example of this species, yet it is an old fish, the sword being long, and the dorsal fin having been worn away throughout its whole length, except at the base of six or seven of the foremost rays, and even these are mere stumps. The stomach contained pilchards and cuttle-fish.—*J. J. Reading; Plymouth, November* 1, 1863.

The Boring Snail of the Bois Des Roches. — In the commune of Retz, Picardy, and on the right of the road between Hardinghen and Marquise, about ten miles from Boulogne-sur-Mer, is situated Le Bois des Roches—a small wood, deriving its name from the numerous masses of calcareous rock there collected, which have been thrown up by some convulsion of nature. These rocks are extremely solid and impenetrable, formed of what is called "marbre Napoléon," from being the material of which the column at Boulogne is built, which, from its perfect preservation and sharpness of outline, notwithstanding its complete exposure to wind and weather for nearly sixty years, is a proof of the hardness and durability of the stone. Nevertheless the sides of these rocks which face the north-east and east are covered with myriads of round holes, funnel-shaped externally, about 1½ inch in diameter at the mouth, contracting suddenly to about half an inch, and sometimes extending 6 inches in depth, irregular and winding in the interior, and invariably terminating in a cup-shaped cavity. These holes are the winter retreat of a peculiar species of snail—Helix saxicava—which, during the summer months, inhabit the surrounding wood, retiring to their stony habitations during the winter. The snails in question not only live in the holes, but excavate them themselves at the rate of about half an inch during each hybernation. In their selection of winter quarters they never choose the upper surface of the rock, but always a more or less vertical face of it, and that which is least exposed to the prevailing wind and rain, keeping the actual entrance to their dwelling narrow, although the mouth of the hole is expanded, thus using every precaution to render their habitations secure against the weather during the most inclement season of the year. The mode in which they effect this excavation has hitherto been a source of considerable controversy amongst the French *savans*, some affirming it to be mechanical, others chemical. From the investigations, however, of my friend M. Bouchard-Chatereaux, the well-known *savant* of Boulogne-sur-Mer, who has studied their peculiarities for years, and who, living so near to them, has had opportunities of observation which render him the most able authority on the subject, it would appear that the chemical theory is the correct one, and that the excavation is made by the dissolution of the rock by means of an acid given off from the fore part of the foot of the snail. M. Bouchard has pointed out that the Helix saxicava, when in its winter retreat, unlike the rest of its tribe, which form one or several epiphragms over the mouth of their shells, protrudes half its body from the shell, and fixes itself firmly against that portion of the rock which it selects for its winter habitation. Here it remains motionless until the return of spring again brings it forth from its hole. During this period it, as it were, *sucks* the rock away in the form of a cup, leaving the stone around the excavation, for about one-sixteenth of an inch in depth, impregnated with a sort of greasy matter, which disappears after exposure to the atmosphere. If the snail be forced from its hold, and litmus paper be applied to its foot and the place it has just left, it at once shows the presence of an acid by turning violet, more or less tinged with red according to the degree of moisture on the spot to which it is applied. Moreover, the surface of the rock is furrowed all over with tracks leading from one hole to another, doubtless caused by the corrosive action of the feet of the snails in the passage to and fro during many centuries. The Helix saxicava also differs from other tribes, in the fact that, whilst *they* generally congregate in heaps during the winter, *it* is almost always solitary. When more than one are found in the same hole, they are invariably at some distance from each other, as though fearing the action of the acid on their shells. Again, whilst in summer its tracks are marked by the usual slimy, shiny mucus, in its progress over the rocks, on the approach of winter none of this is perceptible. Hence it would seem that the acid secretion is quite distinct from the mucus, and is probably derived from a separate system of organs. The facts here stated seem to me to prove the chemical nature of the proceeding. The effect of the gastric juice of animals in dissolving calcareous substances is well known, and some very interesting experiments made by M. Bouchard prove that that of fishes possesses an equivalent power. May we not regard these facts as additional proofs of the wisdom and benevolence of the Almighty in furnishing the means not only of comfort, but also of the preservation of life? It is well known that when, from any cause, the stomach is allowed to remain empty for a lengthened period, the gastric juice acts prejudicially upon it, destroys its coats, and at the same time the life of the creature. The Helix saxicava has no employment for its stomach during winter: may we not believe that the gastric juice, instead of being allowed to remain in that organ to its prejudice, is diverted to the foot, and is thus made the means of procuring shelter? — *Henry J. B. Hancock; 37, Hanley Street, September* 18, 1863.—'*Field.*'

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* They have often been seen to void several vertebræ per anum, when landed on the bank of the river.

[Where is a description of Helix saxicava to be found? The writer mentions three modes whereby these snails may possibly make their burrows—1st, by mechanical means (trituration of the stone is probably intended); 2nd, chemical, *i.e.*, the dissolution of the stone by means of an acid given out by the snail; and 3rd, suction, *i.e.*, by sucking the rock away in the form of a cup. A fourth solution has, I confess, occurred to me. Does the snail make the holes which are described? or does it find them ready made, and merely avail itself of them, as do *all* other snails of *all* similar cavities? Will my valued correspondent Mr. Merle Norman express an opinion on this subject?—*Edward Newman.*]

Hidden Shells, and the Tracks they make.—These long, winding marks, sometimes extending several yards, are formed by three species of Littorinæ, *viz.*, L. littorea, L. rudis and L. littoralis: they are generally made in the soft mud or sand, and are usually met with where Fuci are abundant. The very small tracks, varying from a few inches to a foot long, are formed by Rissoæ, nearly all belonging to one species, *viz.*, R. Ulvæ; these are terminated by a small raised dot of sand. Some openings, as if cut with a blunt instrument, with a raised button at the end, are produced by the Tellina solidula; the animal buries itself edgeways in the sand. The one close by, with a small perforation in the raised portion, is made by the common cockle (*Cardium edule*). On the sands between West Kirby and Hilbre, small tracks, very similar to those of the Rissoa, may be seen; these belong to a small white shell of the Bulla tribe—Cylichna obtusa. The two Mactræ, namely, stultorum and solida, may be observed coming to the surface as the tide rises over the sand in which they are buried. Sometimes the animal may be seen leaping like the Pecten. At the verge of low water, at spring tides, a curious hole, contracted in the middle and somewhat like a key-hole, may be found; this is the burrow of the Solen, but it is generally too deep to be dug out, and, as it bores very rapidly, cannot be obtained. Donax anatinus bores about two inches beneath the surface of the sand near low water: I have not seen any traces left above ground. Pholas candida is imbedded in stiff clay, and may be obtained between New Brighton and Leasowe (I would advise persons shell-hunting in this locality to put on waterproof boots). Pholas crispata bores into the sandstone rock at Hilbre: they must be extracted with a small pickaxe or a hammer and chisel, and occasionally another shell is obtained when searching for these, *viz.*, Tapes pullastra.—*F. P. Marrat; 2, Peveril Terrace, Edge Lane, Liverpool.*—'*Naturalist's Scrap-Book,*' Part 8, p. 126.

Pallas' Sand Grouse in Ireland. — I have before me a specimen of Pallas' sand grouse, the capture of which has not, so far as I am aware, appeared in the 'Zoologist.' It was shot at Ross, in the county of Fermanagh, on the 8th of June, 1863. This and another were seen flying about together in the evening by a labouring man who thought they were a curious kind of swallow. He got a musket, and when one of them alighted on the ground shot it.—*Clermont; Ravensdale Park, January* 15.

Notes on the Ornithology of Iceland.

By ALFRED NEWTON, Esq., M.A., F.L.S., &c.*

[After giving a list of all the works and papers on the Ornithology of Iceland of which he is cognizant, Mr. Newton proceeds as follows:—]

FROM a consideration of the above-mentioned works, or at least of such of them as I have examined, coupled with my own personal experience of the country, I am inclined to believe that Iceland offers a field of considerable promise to the ornithologist; and though it is not to be at all expected that any previously undescribed species of birds will reveal themselves, yet many possessing great interest commonly frequent both the coast and the interior. Besides which, it is not beyond the bounds of probability that one or two of those whose places of retreat during the nesting season, if not altogether unknown, are still shrouded in much mystery, may be found breeding on some lonely Icelandic "heithi." Of these I may mention the knot and the sanderling, and perhaps even the gray plover (*Squatarola helvetica*),—though this latter bird, of almost ubiquitous occurrence, does not seem hitherto to have been met with in the island,—as likely to reward the search of some future investigator. The character of the Avi-fauna of the country, as might have been expected from its geographical position, is essentially European; just as that of Greenland has American tendencies. Indeed, dismissing from our consideration the species of purely Polar type, which are common to the whole arctic region, there are, as far as my knowledge extends, only four or five which make Iceland their home without inhabiting some other part of continental Europe. These are the Iceland falcon, the northern wren (which, however, does occur as a resident in the Færoes), the Iceland ptarmigan, the Iceland golden-eye, and the harlequin duck. The first is by most ornithologists of the present day recognized as distinct from the true gyr-falcon, and, though the differences between them are but slight, I believe no one has ever observed the characteristics of the Scandinavian form in an Icelandic specimen. The second has been but lately separated from our own common wren, which is a bird as well known throughout the greater part of the Continent as in this country, but I believe the separation is deserved. The third, the ptarmigan, certainly differs in some respects very considerably from the bird which occurs in Scotland and Norway, and much more nearly resembles the form found in Greenland. The fourth and fifth are most unquestionably distinct species; and both are found breeding over a good part of the arctic portion of the New World, while neither occurs in the rest of Europe, except accidentally. I am only aware of one species which does not properly belong to Europe, and which yet occurs frequently in Iceland without breeding there—this is the Greenland falcon.

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* Extracted from 'Iceland: its Scenes and Sagas.' By Sabine Baring-Gould.

Before proceeding to a detailed and technical list of the birds of Iceland, the reader of this work might perhaps wish to have placed before him a sort of general summary of the Ornithology of the country; for it always happens that many of the species which swell the bulk of a local catalogue make but little show in the eyes of a traveller, and are entirely wanting in the pictures which memory recalls to his mind. To begin then with the falcons, which (for so many centuries more highly prized than any others by all the nations of Europe) are yet to be found in greater plenty in Iceland than elsewhere, and are as much sought for by collectors now as formerly by kings or emperors. Almost exterminated in the British islands, in Iceland the whitetailed eagle is still constantly seen perched in solitary grandeur on the rocky shore, while the courageous little merlin glides over the hill-tops, striking fear and silence into the titlark and the wheatear, the white wagtail and the snow bunting. Wherever the birch or the willow attains the height of a man, there may the monotonous twitter of the redwing, followed by a low inward warble, be heard by the traveller. Companies of ravens throng every fishing settlement, and obtain a plentiful subsistence from the offal by which it is surrounded. The ptarmigan, as I have above said, in plumage if not in species distinct from that which haunts the mountains of Scotland, the fjelds of Norway, or the Alps and Pyrenees of Southern Europe, utters its strange guttural croak among the contorted slabs of the lava streams. Where the turf is softest and greenest, the golden plover, by its tameness, provokes the passer-by to unsling his gun—unless, indeed, his hunger being satisfied (not an every-day event in Iceland), he is disposed to take a more merciful view of its familiarity. Along the shore, flocks of wheeling turnstones, ring dotterells, dunlins, and other less common kinds of sandpipers, attract the attention of even the most unobservant. The merry whistle of the redshank contrasts with the discontented wail of the wary whimbrel, as, keeping well out of shot, he rises lightly from the barren moor. While from the marsh the "zick zack, zick zack" of the snipe sounds cheerily, and suggests to the sportsman recollections of former, or visions of future, visits to some well-remembered bog or fen, far away across the south-eastern sea. As he strives to ascertain the source of some secluded hot-spring, which in more accessible districts would outrival Buxton or Aix, he may perhaps catch a glimpse of a water rail creeping stealthily through the luxuriant herbage. At almost any of the numerous pools throughout the country, the rednecked phalarope is to be seen busily seeking its food round the margin, or, like a graceful Naiad, reposing quietly on the smooth surface in the softened glow of the northern midnight. Here, on a patch of semi-natant bog-bean, the weird-looking horned grebe piles a mass of water-weeds, dragged from the muddy bottom, whereon to deposit its chalky eggs; while overhead a swarm of arctic terns assail the wayfarer's ears with their shrill shrieks, and, should he stop to examine one of the mottled living powder-puffs he finds crouching in the grass, almost threatens his eyes with their sharp beaks.

On some wide lake or far-receding fjord, a single northern diver may be descried, spirit-like, disappearing and reappearing almost without causing a ripple, until, having finished his fishing, he flaps heavily along the surface, leaving a wake like that of a steamer, and then, mounting to a vast height, finally vanishes in quest of his mate, whom he left brooding her dingy eggs far beyond the rocky ridge, to cross which would cost us two hours' hard work; while, long after he is out of sight, his wild scream, like a cry of human agony, reaches us, and jars our feelings by its discord with the placid scene so lately before us.

Where the stream rushes fastest and foams most furiously over its stony bed there is the home of the quaintly-marked and yet beautiful harlequin duck, so rare a visitant to other parts of Europe. To the upland tarn resorts the longtailed duck, while the teal, the widgeon, and the pintail frequent the less bleak lakes, on the islands of which, secure from the ravages of the arctic fox (the only beast of prey in the country), they rear their young, in company with the scoter, the scaup and the Icelandic goldeneye. On yonder grassy plains, intersected by the innumerable rivers that spring from those distant jökuls of eternal ice, there yet assemble (but not, alas! in numbers as of yore) a goodly company of wild swans. There they make their domestic arrangements, proclaiming their completion with the glorious sound of the trumpet. There they lay their elephantine eggs; and there—O joyful moment!—they lead forth their infant train, too often, indeed, only to suffer capture and death at the hands of the neighbouring peasants, or, if they survive these casualties, to fall the victims of southern gunners.

The Eider, throughout Northern Europe the chief friend of man amongst birds, inhabits islets, either naturally or artificially constructed, which are guarded from intrusion by the lords of the soil as jealously as any Norfolk game-preserve or Oriental harem, and testifies, by its familiarity, to the effectual means taken for its security. It is, indeed, in Iceland, as in other lands over which it ranges, almost a domesticated fowl, and readily occupies the nesting places prepared for its accommodation, paying valuable tithe and toll in down and eggs for the protection it enjoys.

Seawards small parties of gannets may be seen circling over the same spot, heavily plunging one after another beneath the surface, and each, as it emerges with its prey, shaking the water with its wings, and joining its brethren aloft to repeat the same process. That ridge of seaweed-covered rocks, left bare by the falling tide, is surmounted by a cluster of cormorants, some slumbering in the sunshine, while others are intent on preening their feathers. Near the mainland, the great blackbacked gull soars in dignified majesty around the intruder, expressing his anger in notes of the deepest bass, until the alarm being spread abroad, a cloud of kittiwakes, obedient to his summons, hurry from the neighbouring shallows and awaken the echoes with their petulant exclamations; which are redoubled, should a skua, that Víking among birds, make his appearance. Still and ghost-like in the distance, buoyant fulmars wing their way, wheeling round with scarce a beat of their wide pinions.

The insulated stack or precipitous cliff affords a footing, and where a footing a nesting-place, to countless razorbills and guillemots, which crowd there in numbers even more confusing than may be seen by a London excursionist to Flamborough Head or the Isle of Wight. But of all the birds of Iceland the greatest interest centres in the gare-fowl, or great auk (*Alca impennis*, Linn.), the only wingless, or rather flightless, species of the northern hemisphere. There is no doubt that in former days it was plentiful enough, at certain seasons, in certain localities to which it resorted to breed. From such of these as were easy of access to the inhabitants of the nearest villages it has been thoroughly exterminated; but until the farthest rock of the group called the "Fuglasker," lying off Cape Reykjanes, be examined, I think the question of its utter extinction must not be considered settled. Indeed it is probable, from the interest that has now been excited on the subject, that no great period will elapse before this rock, the Geirfugladrángr, is visited. But the expedition is one of no small danger, and during the last five years the weather has not admitted of its being undertaken. I can only express my sincere wish that whenever this rock is reached, the bold adventurer may reap a fitting reward; but at the same time I must declare my hope that in such case he will be careful to see that the best possible use is made of the spoil. The mere addition to the already considerable number of stuffed skins and blown egg-shells of the species which are dispersed in various collections will be no addition whatever to Science. If the bird is doomed to extinction, and such, I fear, is its fate, all who are concerned in bringing about the catastrophe are bound to see that the most is made of whatever chance may throw in their way. It should accordingly be their object, if possible, to capture the examples alive, and transmit them as speedily and carefully as possible to the gardens of the Zoological Society of London, where they are sure of receiving every attention; where their gestures may be studied, and their attitudes transferred to the painter's canvass. Or should circumstances hinder the birds from being taken alive, the whole bodies should be preserved in spirit or brine, or by the application of pyroligneous acid, and thus rendered serviceable for the anatomist's scalpel. The same may be said of the eggs; their contents should on no account be thrown away. but taken care of in the same manner as the birds, for it is difficult to exaggerate the value of embryology in the present state of scientific research. Professed naturalists are of course aware of all this, but these words may haply be read by some who would otherwise think that by neatly preparing the skins, and according to the most approved method blowing the eggs of the very last of the gare-fowls, they were advancing the study of Natural History.

Having thus indicated the most prominent features in the Ornithology of Iceland, I will conclude by giving a list of the birds, which, as nearly as I can ascertain, have been hitherto met with in that country; in drawing it up my object has been to exclude all, about the occurrence of which any reasonable doubt may be said to exist, though reference is made to most of them in the notes. This list is rather intended for the scientific than the general public. It will be found that I have quoted especially from Faber, whom I consider by far the best authority on the subject, and I only hope I have not been unnecessarily critical, especially when speaking of the labours of Herr Preyer, from whose opinion I am unfortunately so often compelled to dissent.

Whitetailed Eagle (*Haliaëtus albicilla*, Linn.) Generally distributed throughout the island in the vicinity of water, but nowhere very abundant. Breeds and, according to Faber, remains during the winter.

Iceland Falcon (*Falco islandicus*, Gmel.) Probably of universal occurrence in Iceland, but certainly more common near Myvatn than anywhere else in the island, owing perhaps to the great facilities for breeding afforded them by the inaccessible precipices in the neighbourhood, and to the abundance of food in the immediate neighbourhood.

Greenland Falcon (*Falco candicans*, Gmel.) [One seen.]

Merlin (*Falco æsalon*, Linn.) Arrives, according to Faber, at the end of March, and goes away at the beginning of October. Very common everywhere, and breeds on the moors.

Snowy Owl (*Surnia nyctea*, Linn.) Not unfrequently observed in winter, but rarely seen in summer.

Shorteared Owl (*Otus brachyotus*, Gmel.) [Doubtful.]

House Martin (*Chelidon urbica*, Linn.)

Swallow (*Hirundo rustica*, Linn.) Both the above-mentioned species seem to occur annually, but do not remain long in one place.

Northern Wren (*Troglodytes borealis*, Fischer).

Blackbird (*Turdus merula*, Linn.) Seems to have occurred on two occasions in Iceland. [Doubtful.]

Redwing (*T. iliacus*, Linn.) An annual migrant, and found in suitable localities throughout the island. Breeds early, beginning its nest before the snow is well off the ground.

Black Redstart (*Ruticilla tithys*, Scop.)

Wheatear (*Saxicola œnanthe*, Linn.) Rather plentiful over the whole island, but, of course, only a summer visitant.

White Wagtail (*Motacilla alba*, Linn.) Arrives at the end of April, leaves in September.

Meadow Pipit (*Anthus pratensis*, Linn.) Common on low grounds over the whole country. Migratory.

Lapland Bunting (*Emberiza lapponica*, Linn.) Very seldom observed in Iceland.

Snow Bunting (*E. nivalis*, Linn.) Perhaps the commonest of Icelandic small birds. The nests are pretty easy to find with a little patient watching, but difficult, and sometimes impossible, to get at, from being situated so far in crevices of the rock.

Mealy Redpoll (*Linota linaria*, Linn.) Rare in Iceland.

Raven (*Corvus corax*, Linn.) Very abundant, and resident all the year.

Hooded Crow (*C. cornix*, Linn.) Does not inhabit Iceland, but occasionally pays a visit thither.

Iceland Ptarmigan (*Lagopus islandicus*, Faber.) In Iceland these birds are pretty numerous, and not confined to the mere mountain tops, as are their brethren in Scotland and other parts of Europe, but may be found in almost all places where berries grow.

Water Rail (*Rallus aquaticus*, Linn.) Rare in Iceland, though apparently a resident there.

Coot (*Fulica atra*, Linn.) [Very rare.]

Lapwing (*Vanellus cristatus*, Meyer). Occasionally wanders to the south-west portion of the island, chiefly in autumn.

Golden Plover (*Charadrius pluvialis*, Linn.) Quite the commonest bird in Iceland, and of great use to the traveller, who by its means often obtains a good meal in the desert.

Ringed Plover (*Aegialites hiaticula*, Linn.) Not rare on the sea-coast and on some of the moors in the interior.

Turnstone (*Strepsilas interpres*, Linn.) Arrives in Iceland about the last week in April; and I have little doubt breeds there, for Mr. Proctor has received its unmistakeable eggs from the north.

Oystercatcher (*Haematopus ostralegus*, Linn.) More common in the south than in the north.

Gray Phalarope (*Phalaropus fulicarius*, Linn.) In 1858 I discovered two pairs on a lake, but in a few days afterwards they had disappeared, and they certainly did not remain to breed there that year.

Rednecked Phalarope (*Phalaropus hyperboreus*, Linn.) Very common all over the island on all ponds and lakes. Arrives late in May, and at once begins the duties of nidification. On one occasion, in the month of June, I saw a flock of at least a hundred sitting on the surf, between the breaking waves and the shore.

Redshank (*Totanus calidris*, Linn.) Very commonly met with throughout the island. Arrives about the middle of April, and, according to Faber, some remain till the end of the year.

Blacktailed Godwit (*Limosa ægocephala*, Linn.) Arrives the last week in April, according to Faber.

Ruff (*Philomachus pugnax*, Linn.) Faber records a single instance of the occurrence of this bird in Iceland, a female, near Reykjavik, at the beginning of September, 1820.

Knot (*Tringa Canutus*, Linn.) On the south-west coast it is very well known as a bird of passage. One morning, at the end of May, 1858, I found the shore at Kyrkjuvogr literally alive with a large flock of knots, all in their beautiful red plumage. There had been none there the day before. They stayed about a week, their numbers gradually diminishing, until at last only two or three were to be seen.

Purple Sandpiper (*T. maritima*, Gmel.) Common everywhere in the neighbourhood of the coast, and occasionally to be seen inland, where it also breeds. Hatches its eggs about the middle of June.

Dunlin (*Tringa alpina*, Linn.) Not so abundant, according to my observation, as the last species, but frequents the same localities.

The Tringa Schinzi of Herr Preyer is doubtless the small race of dunlin well known in some parts of Europe, and not the American bird to which that name is often misapplied.

Sanderling (*Calidris arenaria*, Linn.) Possibly more common in Iceland than has been thought.

Common Snipe (*Gallinago media*, Leach). Fairly abundant in suitable localities.

Curlew (*Numenius arquatus*, Linn.) [Seven specimens recorded.]

Hudsonian Curlew (*N. hudsonicus*, Lath.) [One specimen recorded.]

Whimbrel (*N. phaeopus*, Linn.) A very common bird, and one of the most characteristic of Iceland. Arrives at the end of April, breeds on the moors, and departs by the middle of September.

Common Heron (*Ardea cinerea*). [A straggler.]

Whooper [*sic*] (*Cygnus ferus*, Leach). According to all accounts, common in some districts of the country.

Goose (*Anser*). [Species left undecided.]

Whitefronted Goose (*Anser albifrons*). On the 11th of May, 1858, I saw several freshly-killed examples at Reykjavík, one of which I purchased, and had it preserved as a specimen.

Bernacle Goose (*Bernicla leucopsis*, Temm.)

Brent Goose (*B. brenta*, Linn.)

Garganey (*Anas querquedula*, Linn.) [Doubtful.]

Teal (*A. crecca*, Linn.) Very common. Arrives the third week in April, and departs the beginning of October.

Wild Duck (*A. boschas*, Linn.) Common in Iceland. Most remain through the winter, but some migrate.

Pintail (*A. acuta*, Linn.) Arrives on the coast at the end of April, and reaches Myvatn the beginning of May, where it breeds pretty commonly. Probably of general distribution throughout the country. Disappears at the beginning of September.

Wigeon (*A. Penelope*, Linn.) Not so common as the preceding, and arrives later. The time of its departure not ascertained. Breeds at Myvatn, and probably elsewhere.

Pochard (*Fuligula ferina*, Linn.) [Twice observed.]

Scaup (*F. marila*, Linn.) The commonest duck breeding at Myvatn, where they arrive about the middle of April, having reached the south a month earlier. In the beginning of October they resort to the fjords in flocks, and shortly after leave the island.

Iceland Goldeneye (*Clangula islandica*, Gmel.) Frequents the sea-coast in winter, and about the middle of March repairs to its breeding quarters, of which Myvatn seems to be chief.

Harlequin Duck (*Histrionicus torquatus*, Bonap.) A common resident in Iceland, but changing its quarters from north to south in winter. Frequents the most rapid rivers, on the margins of which it generally breeds.

Longtailed Duck (*Harelda glacialis*, Linn.) As abundant in Iceland, where it appears to remain all the year, as in other northern countries.

Eider (*Somateria mollissima*, Linn.) Very numerous on the coasts and some of the lakes. Appears not to migrate.

King Duck (*S. spectabilis*, Linn.) By all accounts a rare bird in Iceland, and generally only a straggler from Greenland or elsewhere.

Scoter (*Oedemia nigra*, Linn.) Only to be found at Myvatn, where it breeds.

Goosander (*Mergus Castor*, Linn.) Less common in the south than in the north, where it stays even the whole winter. Breeds.

Redbreasted Merganser (*Mergus Serrator*, Linn.) Far commoner than the preceding, and has much the same habits.

Cormorant (*Phalacrocorax Carbo*, Linn.) Breeds only in the north, and is but a winter visitant in the south.

Shag (*P. graculus*, Linn.) Pretty common, and a resident.

Gannet (*Sula bassana*, Linn.) Very abundant in many localities, and has several breeding places on islands, among which Grimsey, the Reykjanes Fuglasker, and some of the Vestmanneyjar are chief. Remains all the winter.

Arctic Tern (*Sterna macrura*, Naum.) Has many breeding places in various parts of the country.

Kittiwake (*Rissa tridactyla*, Linn.) Exceedingly common all round the coast. Arrives in the beginning of March, and goes away the middle of August.

Common Gull (*Larus canus*, Linn.) [Doubtful.]

Iceland Gull (*L. leucopterus*, Faber). A winter visitant only, arriving towards the end of September, and mostly leaving by the end of April, though some, chiefly birds in immature plumage, remain later into the summer.

Glaucous Gull (*L. glaucus*, Fabricius. Common and resident.

Great Blackbacked Gull (*L. marinus*, Linn.) A resident, and not so common as the foregoing; but, from my own observation, I should say it was more abundant than that, at least in the south-west and in the breeding season. It breeds on the inland waters, which the other is not known to do.

Great Skua (*Stercorarius catarrhactes*, Linn.) Pretty common along the coasts, and occasionally breeding some distance inland.

Pomatorhine [*sic*] Skua (*S. pomatorhinus*). Not common, but has been observed occasionally by several travellers in Iceland.

Arctic Skua (*S. parasiticus*, Linn.) Common enough throughout the island, for it occasionally occurs, and even breeds, on the moors far inland.

Buffon's Skua (*S. Buffoni*, Boie). In 1858 Mr. Wolley and I observed it several times at Kyrkjuvogr; and a very beautiful one, killed a day or two before at Keflavík, was brought to me on the 10th June.

Fulmar (*Procellaria glacialis*, Linn.) Abundant in many parts of the Icelandic seas. Never enters the bays.

Greater Shearwater (*Puffinus major*, Faber). [One seen.]

Manx Shearwater (*P. Anglorum*, Temm.) Remains on the Icelandic seas all the year. Commoner in the south, and especially on the Vestmanneyjar, than in the north.

Stormy Petrel (*Thalassidroma pelagica*, Linn.) [Doubtful.]

Little Auk (*Mergulus alle*, Linn.) Occurs all the year round.

Black Guillemot (*Uria grylle*, Linn.) Resident in Iceland.

Common Guillemot (*U. troile*, Linn.) Breeds in very many spots on the coast, and in some places in countless numbers.

Brunnich's Guillemot (*U. Brunnichi*). [Doubts entertained as to its distinctness: Mr. Newton did not see it.]

Gare-fowl (*Alca impennis*, Linn.) [Not now known to exist.]

Razorbill (*Alca torda*, Linn.) Frequents the same stations as the guillemots, and breeds among them.

Puffin (*Fratercula arctica*, Linn.) Very common, and breeds in numerous localities around the coast.

Northern Diver (*Colymbus glacialis*, Linn.) Not uncommon, a pair or so breeding on nearly every lake.

Redthroated Diver (*C. septentrionalis*, Linn.) More common than the last-mentioned species, especially in the south-west.

Horned Grebe (*Podiceps cornutus*, Gmel.) Very generally distributed on lakes.

ALFRED NEWTON.

[A great number of valuable extracts and criticisms are of necessity omitted.—*E. N.*]

Birds' Skins and Eggs.

MR. J. C. STEVENS begs to announce he will Sell by Auction, at at his Great Rooms, 38, King Street, Covent Garden, on Tuesday, February 9th, at half-past 12 precisely, a VALUABLE and AUTHENTIC COLLECTION of BIRDS' SKINS and EGGS from CANADA, containing many choice examples in good condition. Also the specimens of BIRDS' SKINS and ANIMALS obtained by J. K. LORD, Esq., on his Boundary Expedition in North America, and exhibited during his late Entertainment at the Egyptian Hall, Piccadilly. Authentic Birds' Eggs from Turkey, and a small importation of Impeyan Pheasants from India.

On view the Morning of Sale and Catalogues had.

Mr. Wheelwright's Eggs and Birds' Skins.

MR. J. C. STEVENS begs to announce he will Sell by Auction, at his Great Rooms, 38, King Street, Covent Garden, on Tuesday, February 23, at half-past 12 precisely, the AUTHENTIC COLLECTION of BRITISH BIRDS' EGGS obtained last year in Sweden and Lapland by Mr. H. W. WHEELWRIGHT; together with a choice Collection of Birds' Skins.

On view the day before and morning of Sale and Catalogues had.

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